



August 2021

# CHRONIC HEALTH CONDITIONS

## Federal Strategy Needed to Coordinate Diet-Related Efforts

Accessible Version



A Century of Non-Partisan Fact-Based Work

## Why GAO Did This Study

Many chronic health conditions are preventable, yet they are leading causes of death and disability in the United States. In addition, people with certain chronic health conditions are more likely to be hospitalized or die from COVID-19 than people without them. Poor diet is one prominent risk factor for chronic health conditions, alongside tobacco use, physical inactivity, and others. Numerous federal agencies have a role in addressing diet and its link to chronic health conditions.

GAO was asked to review diet-related chronic health conditions and federal efforts to address them. This report examines (1) federal data on prevalence, mortality, and costs of selected diet-related chronic health conditions; (2) federal diet-related efforts to reduce Americans' risk of chronic health conditions; and (3) the extent to which federal agencies have coordinated their efforts. GAO selected conditions with established scientific links to diet. GAO then analyzed federal data on prevalence, mortality, and health care spending; reviewed agency documents; interviewed officials from 21 federal agencies with a role in diet, as well as nonfederal stakeholders; and compared agency actions with selected leading practices for collaboration, which GAO has identified in prior work.

## What GAO Recommends

Congress should consider identifying and directing a federal entity to lead development and implementation of a federal strategy for diet-related efforts

View [GAO-21-593](#). For more information, contact Steve D. Morris at (202) 512-3841 or [morriss@gao.gov](mailto:morriss@gao.gov), or Sharon M. Silas at (202) 512-7114 or [silass@gao.gov](mailto:silass@gao.gov).

# CHRONIC HEALTH CONDITIONS

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### What GAO Found

According to the latest federal data available, selected chronic health conditions linked to diet are prevalent, deadly, and costly. These diet-related conditions include cardiovascular diseases (heart disease and stroke), cancer, diabetes, and obesity. For example, 2018 federal data show:

- **Prevalence.** Forty-two percent of adults had obesity—or approximately 100 million U.S. adults.
- **Mortality.** Cardiovascular diseases, cancer, and diabetes accounted for half of all annual deaths in the U.S. (about 1.5 million deaths). People living in southern states, men, and Black Americans had disproportionately higher mortality rates than those living in other regions, women, and other races.
- **Cost.** Government spending, including Medicare and Medicaid, to treat cardiovascular disease, cancer, and diabetes accounted for 54 percent of the \$383.6 billion in health care spending to treat these conditions.

The increase in certain diet-related conditions over time indicates further potential threats to Americans' health. For example, the prevalence of obesity among adults was 19 percent higher in 2018 than in 2009.

GAO identified 200 federal efforts related to diet—fragmented across 21 agencies—for reducing Americans' risk of chronic health conditions. The efforts fall into four categories (see table).

**Federal Agencies' Efforts to Address Diet as a Factor of Chronic Health Conditions**

Categories	Number of efforts	Examples of activities
<b>Total efforts</b>	<b>200</b>	
Research	119	Collect and monitor data, conduct or fund studies, review research to develop guidelines on healthy eating
Education and clinical services	72	Inform program beneficiaries, counsel health care patients, inform the public with mass communication
Food assistance and access	27	Provide food or assistance in purchasing food, improve community access to healthy food
Regulatory action	6	Issue requirements or recommendations for food producers, manufacturers, and retailers

Source: GAO analysis of agency information. | GAO-21-593

Note: Effort numbers do not add up to 200 because some efforts fall into multiple categories.

Agencies have taken some actions to coordinate, such as by establishing interagency groups. However, they have not effectively managed fragmentation of diet-related efforts or the potential for overlap and duplication. Such fragmentation has impacted the agencies' ability to achieve certain outcomes. For example, according to agency officials and nonfederal stakeholders, agencies have not fully addressed important gaps in scientific knowledge where research is sparse, including on healthy diets for infants and young children. A federal strategy for diet-related efforts could provide sustained leadership and result in improved, cost-effective outcomes for reducing Americans' risk of diet-related chronic health conditions.

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**Abbreviations**

AHRQ	Agency for Healthcare Research and Quality
BMI	body mass index
CDC	Centers for Disease Control and Prevention
COVID-19	Coronavirus Disease 2019
DOD	Department of Defense
GPRA	Government Performance and Results Act of 1993
HHS	Department of Health and Human Services
MEPS	Medical Expenditure Panel Survey
NHANES	National Health and Nutrition Examination Survey
NHIS	National Health Interview Survey
SNAP	Supplemental Nutrition Assistance Program
USDA	U.S. Department of Agriculture
VA	Department of Veterans Affairs
WIC	Special Supplemental Nutrition Program for Women, Infants, and Children
WONDER	Wide-Ranging Online Data for Epidemiologic Research

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August 17, 2021

The Honorable Rosa L. DeLauro  
Chair  
Committee on Appropriations  
House of Representatives

The Honorable Tim Ryan  
House of Representatives

Chronic health conditions, such as cardiovascular diseases and obesity, impose a high burden on the United States.<sup>1</sup> According to the Centers for Disease Control and Prevention (CDC), many chronic health conditions are preventable, yet they are leading causes of death and disability in the United States. Poor diet is recognized as a prominent risk factor for developing a chronic health condition, alongside insufficient physical activity and a range of other important factors. In the December 2020 *Dietary Guidelines for Americans*, the U.S. Departments of Agriculture (USDA) and Health and Human Services (HHS) stated that diet is related to chronic health conditions, including cardiovascular diseases, cancer, diabetes, and obesity.<sup>2</sup> We refer to such conditions as diet-related chronic health conditions.

Provisional death estimates show that Coronavirus Disease 2019 (COVID-19) was the third leading cause of death in 2020, following heart disease and cancer, according to CDC.<sup>3</sup> CDC found that those with COVID-19 who reported underlying health conditions, such as cardiovascular diseases and diabetes, were 6 times more likely to be

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<sup>1</sup>Health conditions become chronic when they last 1 year or more and require ongoing medical attention or limit activities of daily living.

<sup>2</sup>Every 5 years, USDA and HHS issue the guidelines based on national experts' review of the current body of nutrition science. See U.S. Department of Agriculture and Department of Health and Human Services, *Dietary Guidelines for Americans, 2020-2025*, 9th ed. (Washington, D.C.: December 2020); and Dietary Guidelines Advisory Committee, *Scientific Report of the 2020 Dietary Guidelines Advisory Committee: Advisory Report to the Secretary of Agriculture and Secretary of Health and Human Services* (Washington, D.C.: U.S. Department of Agriculture, Agricultural Research Service, July 2020).

<sup>3</sup>The COVID-19-causing novel coronavirus (officially known as SARS-CoV-2) is caused by the Severe Acute Respiratory Syndrome (SARS)-CoV-2 coronavirus. For further information on COVID-19 and SARS-CoV-2, see GAO, *Science & Tech Spotlight: Coronaviruses*, [GAO-20-472SP](#) (Washington, D.C.: March 2020).

hospitalized and 12 times more likely to die, compared with those who reported no such conditions.<sup>4</sup> CDC has also found that the risk of severe COVID-19 illness increases sharply as obesity increases.<sup>5</sup>

Beyond health, diet-related chronic health conditions adversely affect several other aspects of the nation's well-being. For example, they affect the economy both in terms of health care spending and indirect costs, like job absenteeism and reduced productivity. In addition, diet-related chronic health conditions affect military eligibility. Over 30 percent of young people aged 17 to 24 do not qualify for U.S. military service because of their weight—a major contributor to the total 71 percent of young people who do not qualify.<sup>6</sup> For current service members, diet-related chronic health conditions can affect readiness to deploy and fulfill physically demanding missions.<sup>7</sup>

Multiple federal agencies have various roles in addressing diet-related chronic health conditions. HHS and USDA, including component agencies like USDA's Food and Nutrition Service, are the two primary federal departments exercising responsibility for implementing U.S. policy related to diet. Other departments, such as the Departments of Defense (DOD) and Veterans Affairs (VA), also have roles.

You asked us to provide information on diet-related chronic health conditions and review federal efforts to address them. This report examines (1) what federal data show about the prevalence, mortality, and health care spending associated with selected diet-related chronic health conditions; (2) federal diet-related efforts that aim to reduce Americans'

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<sup>4</sup>E.K. Stokes et al., "Coronavirus Disease 2019 Case Surveillance—United States, January 22–May 30, 2020," *Morbidity and Mortality Weekly Report*, vol. 69, no. 24 (Department of Health and Human Services, Centers for Disease Control and Prevention, 2020): pp. 759-765.

<sup>5</sup>Centers for Disease Control and Prevention, *COVID-19* (May 13, 2021), accessed July 29, 2021, <https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-with-medical-conditions.html#MedicalConditionsAdults>.

<sup>6</sup>Mission: Readiness, *Unhealthy and Unprepared: National Security Depends on Promoting Healthy Lifestyles from an Early Age* (Council for a Strong America, October 2018).

<sup>7</sup>We have ongoing work examining how the Department of Defense develops food ingredient and menu standards to feed personnel at military installations.

risk of chronic health conditions; and (3) the extent to which federal agencies have coordinated with each other on their diet-related efforts.

To examine what federal data show about the prevalence, mortality, and health care spending associated with selected diet-related chronic health conditions, we analyzed HHS data. We selected four health conditions, which were among the conditions that HHS and USDA identified in the *Dietary Guidelines for Americans* (Dietary Guidelines) 2015-2020 edition as being diet-related.<sup>8</sup> Specifically, we selected cardiovascular diseases, cancer, diabetes, and obesity.<sup>9</sup> Additionally, when reviewing prevalence and mortality data, we included the specific cardiovascular diseases and cancers the Dietary Guidelines identified as being diet-related. Cardiovascular diseases include heart disease and stroke. Cancers identified as diet-related by the Dietary Guidelines include colorectal cancer and postmenopausal breast cancer. For the purposes of this report, we refer to our selected conditions as diet-related chronic health conditions.<sup>10</sup>

Our analysis is intended to provide insight into the effect of diet on health and does not encompass all health conditions with an established link to diet. For example, HHS officials have identified additional health

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<sup>8</sup>The 2015-2020 Dietary Guidelines edition was the most recent available at the time of our analysis. It considered associations between health conditions and specific dietary patterns, such as limiting foods and beverages higher in added sugars, saturated fat, and sodium; and limiting alcoholic beverages. In addition to cardiovascular diseases, certain cancers, diabetes, and obesity, the Dietary Guidelines noted other conditions associated with diet, including overweight and bone health. HHS and USDA issued a more recent 2020-2025 Dietary Guidelines edition in 2020.

<sup>9</sup>We selected conditions that the 2015-2020 *Dietary Guidelines for Americans* identified as having strong or moderate scientific evidence linking them with certain dietary patterns; these were cardiovascular diseases, cancer, diabetes, overweight, and obesity. Of these five conditions, we judgmentally selected four conditions to focus on for presentation purposes; these include cardiovascular diseases, cancer, diabetes, and obesity.

<sup>10</sup>The *Dietary Guidelines for Americans* stated that cardiovascular diseases have strong scientific evidence linking them to diet and noted a moderate link to diet for type 2 diabetes and postmenopausal breast cancer and colorectal cancer. According to CDC, 11 additional cancers have an established link to diet, according to the existing scientific literature; these links to cancer are based on the influence of diet on excess body weight. Obesity has been shown to increase risk for 13 types of cancer. In some instances, we did not have data specific to the types of cancer with an established link to diet; in these instances, we provided information on all types of cancer. According to National Institutes of Health officials, obesity is a chronic disease and, in addition, is strongly associated with other chronic diseases, such as type 2 diabetes, cardiovascular diseases, and certain types of cancer.

conditions, including Alzheimer’s disease and depression, as being diet-related. In addition, the chronic health conditions we have defined as diet-related for the purposes of our report are affected by a multitude of factors in addition to diet. According to CDC, factors interacting with or in addition to diet (e.g., genetics, physical inactivity, and smoking) may lead to chronic health conditions. Finally, we focused our analysis of diet-related chronic health condition prevalence, mortality, and spending on adults.<sup>11</sup>

To examine the prevalence, mortality, and spending associated with our selected diet-related chronic health conditions—cardiovascular diseases, cancer, diabetes, and obesity—we did the following:

- **Prevalence.** To determine the prevalence of these diet-related chronic health conditions, we analyzed CDC publications from the National Center for Health Statistics using 2018 data, the most recent available at the time of our analysis. Specifically, for cardiovascular diseases—namely, heart disease and stroke—and cancer, we reviewed age-adjusted prevalence estimates using data from the National Health Interview Survey (NHIS).<sup>12</sup> For diabetes and obesity,

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<sup>11</sup>We used age-adjusted rates for prevalence and mortality rates to ensure that differences in prevalence or deaths from one year to another are not due to differences in the age distribution of the populations being compared. Additionally, while our analysis focused on adults, diet-related chronic health conditions are also prevalent in younger people; importantly, susceptibilities to these conditions may have origins in early-life exposures, as HHS officials noted.

We used a two-tailed Z-score test to identify significant changes in the prevalence, mortality, or spending associated with chronic health conditions. For these tests, we compared estimates for 2009 with estimates for 2018 in order to emphasize differences unlikely due to chance differences in the surveyed populations; the one exception is that 2009 diabetes prevalence was compared with 2016, due to data availability constraints at the time of our analysis. Findings we report as being significant are those where the significance test was associated with a 95 percent confidence level or higher. We did not perform any trend tests as part of this analysis, but rather compared estimates for two points in time.

<sup>12</sup>NHIS is a cross-sectional, annual household interview survey designed to be a nationally representative sample that covers the civilian, noninstitutionalized population residing in the United States. Several segments of the population are not included in the NHIS, including patients in long-term care facilities, active duty service members with the Armed Forces, incarcerated people, and U.S. nationals living abroad.

we reviewed age-adjusted prevalence estimates using data from the National Health and Nutrition Examination Survey (NHANES).<sup>13</sup> We also assessed trends, analyzing the difference in prevalence between 2009 and 2018, using the NHIS and NHANES data.

- **Mortality.** To determine the mortality associated with diet-related chronic health conditions, we analyzed CDC mortality data for 2009 through 2018 from the National Vital Statistics System using CDC's Wide-Ranging Online Data for Epidemiologic Research (WONDER) application.<sup>14</sup> First, we reviewed the number of deaths and percentage of total deaths in 2018 where the underlying cause of death was one of the selected diet-related chronic health conditions, according to

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Cancer is based on self-reported responses as to whether respondents had ever been told by a health professional that they had cancer or a malignancy of any kind, excluding squamous cell and basal cell carcinomas. Because a prevalence measure for cardiovascular diseases was not readily available, we reviewed the prevalence of heart disease and stroke—the two types of cardiovascular diseases identified in the *Dietary Guidelines for Americans* as being associated with dietary patterns. Heart disease is based on self-reported responses to questions about whether respondents were informed by a health professional that they had any heart disease or heart condition, including angina (angina pectoris) and a heart attack (myocardial infarction). Stroke is based on self-reported responses to a question about whether respondents had ever been told by a doctor or other health professional that they had a stroke.

Because we relied on readily available CDC data, the definition used for adults varies by estimate. Specifically, the prevalence estimates for heart disease, stroke, and cancer include those aged 18 and older. The prevalence estimates for obesity and diabetes include those aged 20 and older.

<sup>13</sup>NHANES is a nationally representative cross-sectional survey that provides information on the health and nutritional status of the U.S. population through direct physical examinations and interviews. We analyzed 2017-2018 NHANES data, the most recent available at the time of our analysis, which we refer to as 2018 data for our reporting purposes. For diabetes, NHANES data were reported for 2013 through 2016, which we refer to as 2016 data for our reporting purposes, and were the most recent available at the time of our analysis. NHANES data are reported for 2 or more years to account for disclosure concerns and to improve reporting reliability.

Estimated prevalence of diabetes includes both type 1 and type 2 diabetes. According to CDC, 90-95 percent of diabetes is type 2 diabetes. Our estimated prevalence of diabetes includes diagnosed and undiagnosed diabetes; diagnosed diabetes is attributed to self-reported information, while undiagnosed diabetes is attributed to fasting plasma glucose and A1C levels. Estimates for the obesity category are attributed to body mass index (BMI), which classifies obesity as a BMI of 30.0 or above.

<sup>14</sup>Cause-of-death statistics are attributed to the underlying cause of death, classified by the International Classification of Diseases, 10th Revision (ICD-10).

CDC data.<sup>15</sup> Second, we used age-adjusted mortality rates for those aged 15 and older to assess trends in mortality for diet-related chronic health conditions and differences in mortality by sex, race, Hispanic or Latino ethnicity, and geographic region.<sup>16</sup>

- **Spending.** To determine the health care spending associated with diet-related chronic health conditions, we analyzed 2009 through 2018 data summaries compiled by the Agency for Healthcare Research and Quality (AHRQ) from the Medical Expenditure Panel Survey (MEPS), which the agency cosponsors with the National Center for Health Statistics.<sup>17</sup> Specifically, we reviewed spending by government payers—which consists mostly of spending by Medicare and Medicaid—and spending by private party payers—including spending by private insurance and out-of-pocket spending by individuals and families.<sup>18</sup> We also examined diet-related chronic health condition spending relative to total U.S. health care spending, which accounts

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<sup>15</sup>For the purposes of this report, we reviewed underlying causes of death. Death certificates report one underlying cause of death, which is the disease or injury that initiated the chain of events leading to death; death certificates can also contain up to 20 contributing causes of death. Chronic health conditions such as obesity are more likely to be listed as a contributing cause of death.

<sup>16</sup>We used the 15 and older age group for our mortality analysis for all conditions except postmenopausal breast cancer, using the available age groups for age-adjusted estimates provided through WONDER. For postmenopausal breast cancer, we restricted the age range to women aged 55 and older. Because we relied on readily available age-adjusted data, we used the 15 and older age grouping to represent adults, and we used the women 55 and older grouping to represent older women for our mortality analysis.

<sup>17</sup>MEPS obtains nationally representative information on Americans' health insurance coverage and use of health care.

<sup>18</sup>In addition to Medicare and Medicaid, government payers include Veterans Affairs, TRICARE (the Department of Defense's health care program for service members and other eligible beneficiaries), and other federal sources. In addition to private insurance and out-of-pocket spending by beneficiaries, private party payers include spending from state and local sources, workers' compensation, other private insurance, other public sources, and unspecified sources. Starting with interviews conducted in 2018, the MEPS Household Component questionnaire was revised to improve respondents' reporting of health care use. According to AHRQ, these questionnaire changes likely affected differences in expenditures from 2009 to 2018.

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for total U.S. health care spending associated with conditions.<sup>19</sup> We did not review spending for obesity; according to AHRQ, reliable spending estimates to treat obesity were not available. AHRQ inflated the 2009 through 2017 expenditures to 2018 dollars using the Gross Domestic Product price index. All spending data are limited to those aged 18 and older.

For all the data we analyzed, we took steps to ensure their reliability, including interviewing knowledgeable officials, conducting data checks, and comparing data with public information, when available. After taking these steps, we determined the data were sufficiently reliable for our purposes.

To describe federal diet-related efforts that aim to reduce Americans' risk of chronic health conditions, we interviewed officials from 21 federal agencies and reviewed agency documentation.<sup>20</sup> We included agencies that reported at least one current or ongoing effort (1) related to diet and (2) identified by agency officials as playing an important role in reducing Americans' risk of chronic health conditions.<sup>21</sup> We excluded efforts that

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<sup>19</sup>MEPS spending data for cardiovascular diseases, cancer, and diabetes only includes spending associated with treating these conditions and does not include any ancillary spending. Total U.S. health care spending associated with conditions does not include some spending unrelated to treating a condition, such as spending for primary preventative care. In addition, we analyzed the average total health care spending for adults ever diagnosed with one of these conditions and who had expenditures in a given year.

<sup>20</sup>The 21 agencies include four departments: (1) Department of Defense, (2) Department of Housing and Urban Development, (3) Department of Veterans Affairs, and (4) Environmental Protection Agency (a department-level agency that we consider a department for the purposes of this report). The remaining 17 agencies are components of five departments: (1) Agricultural Marketing Service, (2) Agricultural Research Service, (3) Economic Research Service, (4) Food and Nutrition Service, and (5) National Institute of Food and Agriculture (all within the U.S. Department of Agriculture); (6) National Institute of Standards and Technology (within the Department of Commerce); (7) Administration for Community Living, (8) Agency for Healthcare Research and Quality, (9) Centers for Disease Control and Prevention, (10) Centers for Medicare and Medicaid Services, (11) Food and Drug Administration, (12) Health Resources and Services Administration, (13) Indian Health Service, (14) National Institutes of Health, and (15) Office of the Assistant Secretary for Health (all within the Department of Health and Human Services); (16) U.S. Coast Guard (within the Department of Homeland Security); and (17) National Park Service (within the Department of the Interior).

<sup>21</sup>These efforts have a primary goal or stated purpose of reducing the risk of diet-related chronic health conditions. In some cases, agencies identified multiple programs or activities as a single effort—for example, multiple research studies on the same topic could be considered one effort.

did not explicitly address diet. We collected information on federal diet-related efforts and performed a content analysis of this information to develop categories of efforts and describe their characteristics. We may not have identified all existing federal efforts.<sup>22</sup> We did not assess the effectiveness of individual efforts or take steps to summarize others' attempts to do so.

To examine the extent to which federal agencies have coordinated with each other on their diet-related efforts, we reviewed agency documentation and conducted a second interview, focused on coordination, with 16 of the 21 federal agencies in our review.<sup>23</sup> We then compared agency actions with selected leading practices for collaboration that we have identified in our prior work, to assess the extent to which agencies are following these practices.<sup>24</sup> In addition, we requested information from the Executive Office of the President to learn the extent to which its offices are involved in diet-related efforts. We interviewed staff from the White House Office of Science and Technology Policy in December 2019 and February 2021, and the Office of Management and Budget provided written responses to questions in April 2021.

For all objectives, we interviewed knowledgeable nonfederal stakeholders in the fields of diet and chronic health conditions. These included academics, representatives of think tanks, and representatives of

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<sup>22</sup>We contacted the following additional agencies, not included in our scope, whose officials stated that they do not lead any diet-related efforts that play an important role in reducing chronic health conditions: Department of Education, Department of the Treasury, Federal Trade Commission, General Services Administration, National Aeronautics and Space Administration, and National Science Foundation.

<sup>23</sup>Officials from two agencies (Administration for Community Living, and Centers for Medicare and Medicaid Services) stated that they were not able to meet with us because of the need to prioritize their response to COVID-19. Officials from the Health Resources and Services Administration declined an interview and deferred to the Department of Health and Human Services. Officials from the Agency for Healthcare Research and Quality declined answering questions on government-wide coordination and deferred to the Department of Health and Human Services; however, we did interview officials regarding how they coordinate on specific diet-related efforts. The remaining agency (National Park Service) did not schedule an interview after repeated requests. We determined that these interviews were not necessary for our purposes.

<sup>24</sup>GAO, *Managing for Results: Key Considerations for Implementing Interagency Collaborative Mechanisms*, [GAO-12-1022](#) (Washington, D.C.: Sept. 27, 2012). We selected three of the seven practices (defining outcomes and ensuring accountability, defining and sustaining leadership, and designating resources), which were most relevant to our review. The remaining four practices are bridging organizational cultures, clarifying roles and responsibilities, including relevant participants, and developing written guidance and agreements.

associations focused on specific conditions. We identified 13 individuals or groups through interviews with agency officials and documents we reviewed. While we were not able to interview all stakeholders with an opinion or expertise on the topic, we were able to choose a range of stakeholders that, for example, represented associations focused on heart disease, cancer, and diabetes. Views from these knowledgeable stakeholders cannot be generalized to those we did not speak with as part of our review. In addition, we reviewed selected consensus reports that had been identified and discussed by officials and stakeholders we interviewed; we interviewed at least one author of each report. While we did not conduct an exhaustive literature review to identify all relevant reports, the ones we discuss in this report serve as examples of policy options that stakeholders have proposed.

We conducted this performance audit from May 2019 to August 2021 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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## Background

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### Link between Diet and Chronic Health Conditions

According to CDC, many chronic health conditions are caused by four main risk factors: poor diet, lack of physical activity, tobacco use and exposure to secondhand smoke, and excessive alcohol use.<sup>25</sup> Because these four risk factors all represent changeable behaviors, improvements in them can reduce Americans' likelihood of developing chronic health conditions and benefit their quality of life.

One critical improvement, healthy eating, prevents or delays the onset of chronic health conditions and helps people manage these conditions and

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<sup>25</sup>In addition to the four main risk factors, CDC identified other factors that affect chronic health conditions, including genetics, aging, and sleep.

prevent complications.<sup>26</sup> According to the Scientific Report of the 2020 Dietary Guidelines Advisory Committee, dietary patterns can affect the risk of several chronic health conditions.<sup>27</sup> Specifically, dietary patterns emphasizing fruits, vegetables, and whole grains were associated with lower risk of developing diet-related chronic health conditions, including cardiovascular diseases, certain cancers, diabetes, and obesity. In addition, certain chronic health conditions are associated with greater risk of developing other diseases. Most notably, obesity is associated with an increased risk of many serious diseases, including cardiovascular diseases, certain cancers, diabetes, and severe COVID-19 illness, according to CDC.<sup>28</sup> The Dietary Guidelines Scientific Report examines associations between chronic health conditions and specific dietary patterns and does not offer comprehensive information on all chronic health conditions influenced by dietary factors. According to HHS officials, neurodegenerative diseases, age-related frailty, sarcopenia, and depression are among other conditions related to diet.<sup>29</sup> See table 1 for definitions of cardiovascular diseases, cancer, diabetes, and obesity, as well as their links to diet.

**Table 1: Selected Diet-Related Chronic Health Conditions and Their Links to Diet**

Condition	Definition	Selected links to diet
Cardiovascular diseases	Diseases that affect the heart or blood vessels, including heart disease (a set of conditions that affect the heart’s structure and function) and stroke (a condition in which blood flow to the brain is blocked)	Dietary patterns that are higher in vegetables, fruits, whole grains, low-fat dairy products, and seafood—and lower in red and processed meats, refined grains, and sugar-sweetened foods and beverages—are associated with decreased risk of certain cardiovascular diseases.

<sup>26</sup>Centers for Disease Control and Prevention, *Poor Nutrition* (Jan. 11, 2021), accessed June 5, 2021, <https://www.cdc.gov/chronicdisease/resources/publications/factsheets/nutrition.htm>.

<sup>27</sup>Dietary Guidelines Advisory Committee, *Scientific Report of the 2020 Dietary Guidelines Advisory Committee*.

<sup>28</sup>Obesity—defined in adults as having a BMI of 30.0 or greater—may also be linked to a number of other conditions, such as Alzheimer’s disease and arthritis. These conditions are outside the scope of this report. In addition to diet, other risks, such as tobacco use, could also contribute to such chronic health conditions; these are also outside the scope of this report.

<sup>29</sup>Neurodegenerative diseases occur when nerve cells in the brain or peripheral nervous system lose function over time and ultimately die. Alzheimer’s disease and Parkinson’s disease are the most common neurodegenerative diseases. Sarcopenia is a condition characterized by loss of muscle mass, strength, and function—often in older adults.

Letter

Condition	Definition	Selected links to diet
Cancer	Diseases in which abnormal cells divide without control and can invade nearby tissues	Dietary patterns that include vegetables, fruits, and whole grains are associated with reduced risk of colorectal cancer and postmenopausal breast cancer.
Diabetes	Diseases in which the body does not make enough insulin or use it the way it should to control the level of glucose (a type of sugar) in the blood, and other diseases in which the kidneys make a large amount of urine	Dietary patterns that are higher in vegetables, fruits, and whole grains—and lower in red and processed meats, high-fat dairy products, refined grains, and sweets/sugar-sweetened beverages—reduce the risk of developing type 2 diabetes.
Obesity	A condition of having a body mass index at or above 30.0 kg/m <sup>2</sup>	Dietary patterns emphasizing vegetables, fruits, whole grains, seafood, and legumes—and lower in meats, refined grains, and sugar-sweetened foods and beverages—are associated with lower body mass index, waist circumference, and percent body fat.

Legend:  
kg/m<sup>2</sup> = kilograms per meter squared

Source: GAO summary of information from the National Institutes of Health and the 2020 Dietary Guidelines Advisory Committee. | GAO-21-593

Multiple factors affect dietary patterns at the individual, community, and national levels. These factors shape both the available diet choices that Americans can make—in other words, the access they have to certain foods—as well as their ultimate decisions about what to eat and drink among those choices. According to HHS, these factors include

- knowledge about healthy foods and meal preparation;
- taste preferences, both genetic and cultural;
- socioeconomic determinants such as low income, which can lead to food insecurity;
- availability of healthy foods at work, school, and other group settings;
- community access to grocery stores, produce gardens, and farmers' markets;
- marketing and nutrition labels on packaged foods; and
- quantity and nutritional quality of foods produced in the United States.<sup>30</sup>

<sup>30</sup>P. Crawford et al., *The Role of Law and Policy in Achieving the Healthy People 2020 Nutrition and Weight Status Goals of Increased Fruit and Vegetable Intake in the United States* (Rockville, MD: Department of Health and Human Services, Office of Disease Prevention and Health Promotion, Sept. 13, 2018). In addition, National Institutes of Health officials told us that psychosocial factors, including stress and mental health status, can affect dietary patterns.

## Federal Role in Addressing Diet-Related Chronic Conditions

The 21 federal agencies in our review have varying missions that relate to diet and chronic health conditions (see table 2). For example, the nine components within HHS aim to enhance the health and well-being of all Americans. The five components within USDA provide leadership on agriculture and food policy. Other agencies, such as DOD and VA, have missions that are targeted at specific populations (e.g., military service members and veterans). To accomplish these missions, federal agencies implement a variety of specific diet-related programs and activities, which we summarize in this report.<sup>31</sup>

**Table 2: Stated Missions of Federal Agencies Discussed in This Report**

Federal agency	Department	Mission
Administration for Community Living	HHS	To maximize the independence, well-being, and health of older adults, people with disabilities across the lifespan, and their families and caregivers
Agency for Healthcare Research and Quality	HHS	To produce evidence to make health care safer, higher quality, and more accessible, equitable, and affordable; and to work within the U.S. Department of Health and Human Services and with other partners to make sure that the evidence is understood and used
Agricultural Marketing Service	USDA	To administer programs that create domestic and international marketing opportunities for U.S. producers of food, fiber, and specialty crops; and to provide the agriculture industry with valuable services to ensure the quality and availability of wholesome food for consumers across the country
Agricultural Research Service	USDA	To conduct research to deliver and transfer solutions to agricultural problems of high national priority and provide information access and dissemination
Centers for Disease Control and Prevention	HHS	To protect America from health, safety, and security threats, both foreign and in the United States
Centers for Medicare and Medicaid Services	HHS	To strengthen and modernize the nation's health care system, provide access to high quality care, and improve health at lower costs
Department of Defense	n/a	To provide the military forces needed to deter war and protect our nation's security
Department of Housing and Urban Development	n/a	To create strong, sustainable, inclusive communities and quality affordable homes for all
Department of Veterans Affairs	n/a	To fulfill President Lincoln's promise "to care for him who shall have borne the battle, and for his widow, and his orphan" by serving and honoring the men and women who are America's veterans

<sup>31</sup>Prior to our review, no government-wide inventory existed of federal diet-related programs and activities.

**Letter**

<b>Federal agency</b>	<b>Department</b>	<b>Mission</b>
Economic Research Service	USDA	To anticipate trends and emerging issues in agriculture, food, the environment, and rural America; and to conduct high-quality, objective economic research to inform and enhance public and private decision-making
Environmental Protection Agency	n/a	To protect human health and the environment
Food and Drug Administration	HHS	To protect the public health by ensuring the safety, efficacy, and security of human and veterinary drugs, biological products, and medical devices; and by ensuring the safety of our nation’s food supply, cosmetics, and products that emit radiation
Food and Nutrition Service	USDA	To increase food security and reduce hunger by providing children and low-income people access to food, a healthful diet, and nutrition education in a way that supports American agriculture and inspires public confidence
Health Resources and Services Administration	HHS	To improve health outcomes and achieve health equity through access to quality services; a skilled health workforce; and innovative, high-value programs
Indian Health Service	HHS	To raise the physical, mental, social, and spiritual health of American Indians and Alaska Natives to the highest level
National Institute of Food and Agriculture	USDA	To invest in and advance agricultural research, education, and extension to solve societal challenges
National Institute of Standards and Technology	Department of Commerce	To promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve our quality of life
National Institutes of Health	HHS	To seek fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to enhance health, lengthen life, and reduce illness and disability
National Park Service	Department of the Interior	To preserve unimpaired the natural and cultural resources and values of the National Park System for the enjoyment, education, and inspiration of this and future generations
Office of the Assistant Secretary for Health	HHS	To play a vital role in keeping the nation healthy, including: overseeing the Department of Health and Human Services’ key public health offices and programs, a number of presidential and secretarial advisory committees, 10 regional health offices across the nation, and the Office of the Surgeon General and the U.S. Public Health Service Commissioned Corps; leading the Healthy People program; and co-leading the <i>Dietary Guidelines for Americans</i>
U.S. Coast Guard	Department of Homeland Security	To defend America’s borders and protect the maritime environment

Legend:  
n/a = not applicable

Source: GAO summary of information from agencies, including the U.S. Departments of Agriculture (USDA) and Health and Human Services (HHS). | GAO-21-593

## Federal Coordination

The responsibility for managing federal programs related to diet-related chronic health conditions is dispersed—or fragmented—across multiple federal agencies, in that more than one agency is involved in the same broad area of national need. We have previously found that federal

agencies often carry out programs in a fragmented way.<sup>32</sup> In some cases, it may be appropriate or beneficial for multiple agencies to be involved in the same programmatic or policy area due to the complex nature or magnitude of the federal effort. In other cases, fragmentation may indicate potential overlap and duplication.

Overlap and duplication can waste scarce funds and limit the overall effectiveness of federal efforts. Overlap occurs when multiple agencies or programs have similar goals, engage in similar activities or strategies to achieve them, or target similar beneficiaries. Duplication occurs when two or more agencies or programs are engaged in the same activities or provide the same services to the same beneficiaries. Like fragmentation, overlap and duplication may be appropriate or beneficial in some cases—for example, to complement an existing program or pilot a new method. In other cases, overlap and duplication occur because programs have been added incrementally over time to respond to new needs and challenges, without a strategy to minimize fragmentation among them. This can negatively affect outcomes and impact, program implementation, and cost-effectiveness.<sup>33</sup> In practice, this can mean

- programs that work at cross-purposes or are conflicting,
- inadequate measurement of progress toward achieving shared goals and objectives,
- failure to cover people who are eligible to receive certain benefits,
- multiple programs providing similar or duplicative benefits to the same people, and
- reduction in benefits resulting from a program structure that is not economical and efficient.<sup>34</sup>

We have previously reported that coordinating programs may help manage or reduce fragmentation, overlap, and duplication for cross-

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<sup>32</sup>GAO, *2021 Annual Report: New Opportunities to Reduce Fragmentation, Overlap, and Duplication and Achieve Billions in Financial Benefits*, [GAO-21-455SP](#) (Washington, D.C.: May 12, 2021).

<sup>33</sup>GAO, *Fragmentation, Overlap, and Duplication: An Evaluation and Management Guide*, [GAO-15-49SP](#) (Washington, D.C.: Apr. 14, 2015).

<sup>34</sup>[GAO-15-49SP](#).

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cutting issues, such as diet-related chronic health conditions.<sup>35</sup> In particular, coordinating agencies need to establish mutually reinforcing or joint strategies to help align activities, processes, and resources to achieve a common outcome.<sup>36</sup>

The strategic and annual performance planning processes under both the Government Performance and Results Act of 1993 (GPRA) and the GPRA Modernization Act of 2010 provide opportunities for federal agencies to identify other agencies addressing related outcomes and coordinate with these agencies to more fully integrate a wide array of federal activities as well as a cohesive perspective on the long-term goals of the federal government.

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## Diet-Related Chronic Health Conditions Were Prevalent, among the Leading Causes of Death, and Costly in 2018, According to Federal Data

Diet-related chronic health conditions were prevalent—for example, approximately 100 million, or 42 percent, of U.S. adults had obesity in 2018. In addition, these conditions were associated with high mortality rates, accounting for 1,487,411 deaths, or over half of all deaths, in 2018.<sup>37</sup> Spending for three diet-related chronic health conditions—

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<sup>35</sup>GAO, *Managing for Results: GPRA Modernization Act Implementation Provides Important Opportunities to Address Government Challenges*, [GAO-11-617T](#) (Washington, D.C.: May 10, 2011).

<sup>36</sup>[GAO-12-1022](#); and *Results-Oriented Government: Practices That Can Help Enhance and Sustain Collaboration among Federal Agencies*, [GAO-06-15](#) (Washington, D.C.: Oct. 21, 2005).

<sup>37</sup>Our estimated number of adults with obesity is the result of applying the NHANES prevalence of adults with obesity to the number of U.S. noninstitutionalized civilian adults aged 20 and older, according to 2018 population estimates from the U.S. Census Bureau.

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cardiovascular diseases, cancer, and diabetes—accounted for about one-quarter of the \$1.5 trillion in total health care spending in 2018.<sup>38</sup>

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## Diet-Related Chronic Health Conditions Were Prevalent in 2018

Diet-related chronic health conditions were prevalent among U.S. adults in 2018, according to age-adjusted CDC data.<sup>39</sup> Specifically:

- **Obesity.** Forty-two percent of adults had obesity, according to measured data.<sup>40</sup>
- **Diabetes.** Twelve percent had diabetes, according to diagnostic and self-reported health information.<sup>41</sup>
- **Cardiovascular diseases.** Eleven percent had heart disease and 3 percent had a stroke, according to self-reported information for these two cardiovascular diseases.<sup>42</sup>

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<sup>38</sup>Our estimated health care spending on diet-related chronic health conditions in 2018 accounts for spending on cardiovascular diseases, cancer, and diabetes; thus, it does not account for spending on all conditions that have an association with diet. We excluded obesity from our analysis of health care spending because reliable spending estimates to treat obesity were not available.

<sup>39</sup>For cardiovascular diseases, cancer, and obesity, 2018 data were available; for diabetes, 2016 was the most recent year for which data were available at the time of our analysis.

<sup>40</sup>In addition, 31 percent of U.S. adults had a BMI of 25.0 to 29.9 (defined as overweight). Of the 42 percent of U.S. adults with obesity, 9 percent had a BMI of 40.0 or above (defined as severe obesity). According to CDC officials, individuals could have more than one chronic health condition; for example, many people with diabetes also have obesity.

<sup>41</sup>For diabetes, NHANES was reported for 2013 through 2016, which we refer to as 2016 data for our reporting purposes, and was the most recent available at the time of our analysis. A recently published peer-reviewed article indicates that the diabetes prevalence has increased since 2016. Specifically, authors of a June 2021 JAMA article found that 14 percent of adults had diabetes in 2017-2018, using age-adjusted prevalence information from NHANES. See Li Wang et al., “Trends in Prevalence of Diabetes and Control of Risk Factors in Diabetes Among US Adults, 1999-2018,” *JAMA* (June 2021): <https://doi.org/10.1001/jama.2021.9883>.

<sup>42</sup>For the purposes of this report, we refer to stroke as a chronic health condition with acute events. Those who have had a stroke can experience residual disability and are more prone to further strokes than the rest of the population.

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- **Cancer.** Eight percent had cancer, according to self-reported information.<sup>43</sup>

The prevalence of diet-related chronic health conditions was higher in 2018 than 2009. Specifically, the increase in age-adjusted adult prevalence of stroke (one type of cardiovascular disease), cancer, diabetes, and obesity was between 5 percent and 19 percent.<sup>44</sup> The stakeholders and officials we interviewed identified a variety of factors that affected trends in the prevalence of these diet-related chronic health conditions. For example, the American Cancer Society attributed the increase in cancer prevalence, in part, to the fact that more people are surviving cancer diagnoses. Officials from HHS's National Institute of Diabetes and Digestive and Kidney Diseases, under the National Institutes of Health, identified obesity, dietary factors, physical inactivity, and changing demographics (including age and race/ethnicity) as driving the increase in diabetes prevalence.

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### Diet-Related Chronic Health Conditions Were Leading Causes of Death in 2018, with Notable Disparities by Sex, Race, Ethnicity, and Geographic Region

Diet-related chronic health conditions were among the 10 leading causes of death in 2018, according to CDC mortality data. For example, in 2018, heart disease was the leading cause of death (655,381 deaths), cancer was second (599,274 deaths), stroke was fifth (147,810 deaths; see sidebar), and diabetes was seventh (84,946 deaths). Together, cardiovascular diseases (heart disease and stroke), cancer, and diabetes accounted for 52 percent of U.S. adult deaths in the United States. Although these chronic health conditions have an established association

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<sup>43</sup>Data are based on self-reported 2018 information from NHIS. Cancer prevalence is for all cancers. Postmenopausal breast cancer and colorectal cancer are the two most prevalent cancers with an established link to diet, according to the *Dietary Guidelines for Americans*. Breast cancer among women aged 50 and older accounted for 19 percent of all cancer cases, while colorectal cancer accounted for 9 percent of cancer cases in 2017, according to CDC's National Program of Cancer Registries.

<sup>44</sup>From 2009 through 2018, the percentage of U.S. adults who had obesity increased 19 percent, the percentage who had had a stroke increased 8 percent, and the percentage with cancer increased 5 percent. From 2009 through 2016, which was the most recent year available, the percentage of U.S. adults with diabetes increased 10 percent. In addition, the percentage of U.S. adults with severe obesity increased 46 percent from 2009 through 2018.

The increases in obesity and severe obesity were statistically significant, at  $p < 0.05$ . The remaining prevalence estimates were not statistically significant at  $p < 0.05$ .

**An In-Depth Look at Stroke Mortality Over Time**

After a steady 4-decade decline in stroke mortality among those aged 35 and older, the rate of decline has begun to slow, stall, and even reverse for some populations in recent years, according to a Centers for Disease Control and Prevention (CDC) analysis published in 2017. CDC found that the rate of decline stalled for non-Hispanic Blacks starting in 2012 and found statistically significant increases in stroke deaths in recent years among persons in the South Census Region and among Hispanics (who could be of any race). CDC estimated that changes in stroke mortality trends led to 32,593 excess stroke deaths between 2013 and 2015 alone.

Source: Q. Yang et al., "Vital Signs: Recent Trends in Stroke Death Rates — United States, 2000–2015," *Morbidity and Mortality Weekly Report*, vol. 66, no. 35 (Department of Health and Human Services, Centers for Disease Control and Prevention, 2017): pp. 933-939. | GAO-21-593

to diet, diet is one of many factors that influence mortality associated with diet-related chronic conditions.

The age-adjusted mortality rates for cardiovascular diseases and cancer were lower in 2018 than in 2009, while they were higher for diabetes and obesity.<sup>45</sup> Specifically, the age-adjusted mortality rate per 100,000 adults was 9 percent lower for cardiovascular diseases (10 percent and 6 percent lower for heart disease and stroke, respectively), 14 percent lower for cancer, 1 percent higher for diabetes, and 29 percent higher for obesity.<sup>46</sup> Representatives from the American Heart Association and the American Cancer Society attributed declining mortality rates for cardiovascular diseases and cancer to a variety of factors, including advances in treatment and improvements in screening and diagnostic practices.

There were disparities in mortality by sex, race, Hispanic or Latino ethnicity, and geographic region for diet-related chronic health conditions in 2018, according to CDC age-adjusted mortality data. For example:

- **Sex.** The mortality rate for cancer overall was 1.4 times higher for men than for women, and the mortality rate for heart disease was 1.6 times higher for men.<sup>47</sup>
- **Race.** Black Americans died from diabetes in 2018 at a rate 1.2 times higher than American Indians and Alaska Natives, 1.9 times higher than Whites, and 2.3 times higher than Asians and Pacific Islanders.<sup>48</sup>

<sup>45</sup>Differences in mortality rates from 2009 to 2018 were statistically significant, at  $p < 0.05$  for all diet-related chronic health conditions we reviewed: cardiovascular diseases (overall and for heart disease and stroke, specifically), cancer (overall and for colorectal and postmenopausal breast cancer, specifically), diabetes, and obesity.

<sup>46</sup>For the two most prevalent cancers with a link to diet (postmenopausal breast cancer and colorectal cancer), age-adjusted mortality rates decreased by 10 percent and 17 percent, respectively, from 2009 to 2018. The factors contributing to the trends were outside of our scope.

<sup>47</sup>The mortality rates for cancer per 100,000 were 163.3 for women and 224.5 for men; for heart disease, these rates were 162.6 for women and 264.0 for men.

<sup>48</sup>The diabetes mortality rate for Blacks was 47.9 deaths per 100,000, compared with 40.0 for American Indians and Alaska Natives, 24.8 for Whites, and 20.9 for Asians and Pacific Islanders.

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- **Hispanic or Latino ethnicity.** The diabetes mortality rate for Hispanics and Latinos was 1.2 times higher than for those not of Hispanic or Latino ethnicity.<sup>49</sup>
  - **Geographic region.** The mortality rate for stroke in the South was 1.5 times higher than in the Northeast, 1.2 times higher than in the West, and 1.1 times higher than in the Midwest.<sup>50</sup>

CDC, along with representatives from the American Cancer Society and the American Heart Association, identified other factors contributing to disparities in mortality associated with diet-related chronic health conditions, including structural racism, behavioral risk factors, environmental exposures, social determinants, and health care access.<sup>51</sup>

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## Diet-Related Chronic Health Condition Spending Accounted for About One-Quarter of Total U.S. Health Care Spending in 2018, with Federal and State Payers Paying the Most

In 2018, spending to treat cardiovascular diseases, cancer, and diabetes accounted for 26 percent of the approximately \$1.5 trillion in total health care spending on conditions among U.S. adults, according to AHRQ data.<sup>52</sup> The average total health care spending for adults with these conditions was 30 percent to 92 percent greater than the average health care spending for all adults who reported a health condition that year, depending on condition. Specifically, in 2018, average spending for each

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<sup>49</sup>The diabetes mortality rate for Hispanics and Latinos was 31.4 per 100,000, compared with 26.8 per 100,000 adults for those not of Hispanic or Latino ethnicity.

<sup>50</sup>The age-adjusted mortality rate for stroke per 100,000 adults was 36.6 in the Northeast, 47.8 in the Midwest, 53.1 in the South, and 45.4 in the West.

<sup>51</sup>The American Heart Association identified structural racism as a key driver of health disparities and defined it as the normalization and legitimization of an array of dynamics—historical, cultural, institutional, and interpersonal—that routinely advantage White people while producing cumulative and chronic adverse outcomes for people of color. According to CDC, behavioral risk factors include cigarette smoking and physical inactivity; environmental exposures include unhealthy housing and unhealthy air quality; social determinants of health include education and income; and health care access includes health insurance coverage and access to preventive health services, such as vaccinations.

<sup>52</sup>This reflects 2018 information from MEPS on spending to treat cardiovascular diseases, cancer, and diabetes and does not include ancillary spending related to these conditions. Spending information was not available for obesity in 2018.

adult who reported a health condition that year was approximately \$9,000, compared with approximately \$11,600 (30 percent higher) for adults with cardiovascular diseases, approximately \$15,900 (78 percent higher) for adults with cancer, and approximately \$17,200 (92 percent higher) for adults with diabetes.

Total spending to treat cardiovascular diseases, cancer, and diabetes was 18 percent higher in 2018 (\$383.6 billion) than in 2009 (\$325.8 billion), though the difference varied by condition.<sup>53</sup> When looking at 2018 relative to 2009 spending, spending for cancer was 18 percent higher (\$91.6 billion relative to \$77.4 billion), and spending for diabetes was 169 percent higher (\$118.7 billion relative to \$44.1 billion). In contrast, spending for cardiovascular diseases was 12 percent lower in 2018 than in 2009 (\$179.5 billion relative to \$204.0 billion).<sup>54</sup>

Government payers, which include Medicare and Medicaid, accounted for the majority of 2018 spending for treatment of cardiovascular diseases, cancer, and diabetes.<sup>55</sup> Specifically, AHRQ data show that the government accounted for 54 percent of the \$383.6 billion in spending to treat adults for cardiovascular diseases, cancer, and diabetes (see fig.

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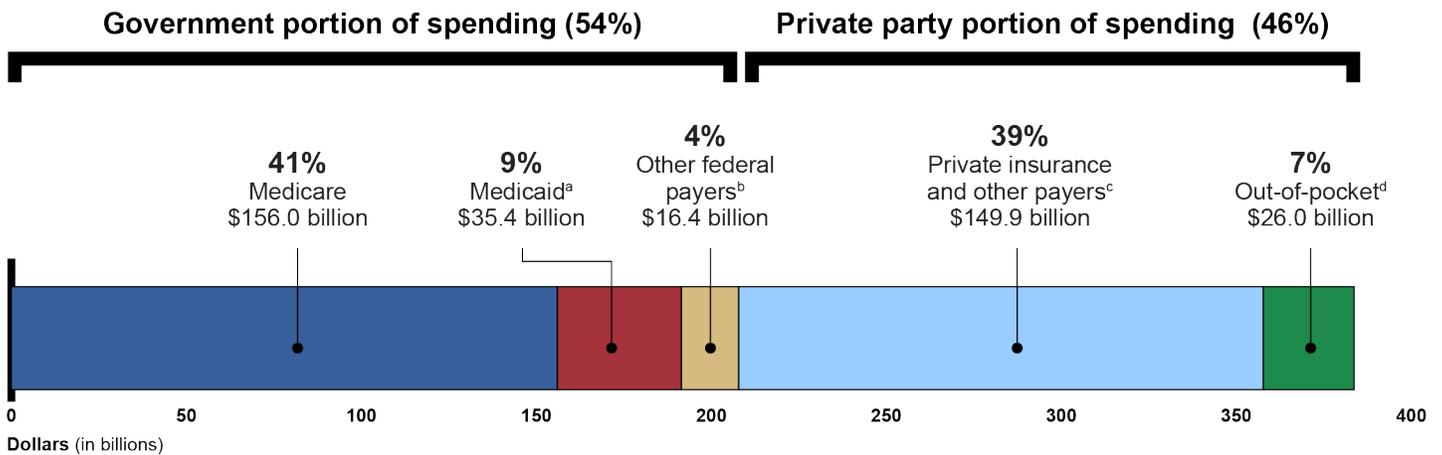
<sup>53</sup>Health care spending to treat all medical conditions among U.S. adults was 34 percent higher in 2018 (approximately \$1.5 trillion) than in 2009 (approximately \$1.1 trillion). This change in spending was higher than the 18 percent increase in spending to treat cardiovascular diseases, cancer, and diabetes during this period.

<sup>54</sup>Spending information for 2009 through 2017 was inflated to 2018 dollars by AHRQ using the Gross Domestic Product price index. The differences in spending for diabetes for 2018 relative to 2009 were statistically significant, at  $p < 0.05$ . The difference in spending in 2018 relative to 2009 for cardiovascular diseases and cancer was not statistically significant at  $p < 0.05$ .

<sup>55</sup>Government payers are Medicare, Medicaid, Veterans Affairs, TRICARE (the Department of Defense's health care program for service members and other eligible beneficiaries), and other federal sources. Spending amounts did not include the amount spent by beneficiaries on out-of-pocket costs, including copays and coinsurance. We excluded obesity from this portion of the analysis, since reliable spending estimates to treat obesity were not available.

1).<sup>56</sup> The remaining 46 percent of spending on these conditions was by private party payers, including private insurance and out-of-pocket spending by beneficiaries.<sup>57</sup> Government spending for diet-related health conditions increased 30 percent from 2009 through 2018, which was 5 times greater than the 6 percent increase in spending on these conditions by private party payers, including private insurance and out-of-pocket spending by beneficiaries, during this period.<sup>58</sup>

**Figure 1. Health Care Spending for Cardiovascular Diseases, Cancer, and Diabetes by Payer, 2018**



Source: GAO analysis of Agency for Healthcare Research and Quality (AHRQ) data. | GAO-21-593

<sup>56</sup>Government payers accounted for 60 percent of spending for adults with cardiovascular diseases, 45 percent of spending for adults with cancer, and 56 percent of spending for adults with diabetes. Spending to treat these conditions is a conservative estimate of total spending associated with these conditions. It does not account for spending on related comorbidities for adults diagnosed with diet-related chronic health conditions. Cardiovascular diseases include heart disease and stroke, among other conditions. In addition, the difference in spending among government and other payers, including private insurance plans, for diet-related chronic health conditions may be due to the specific populations covered by government programs, including older adults and people with low income.

<sup>57</sup>In contrast, government payers accounted for about 46 percent of the \$1.5 trillion in health care spending for all conditions.

<sup>58</sup>From 2009 through 2018, government spending for all medical conditions increased by 49 percent, and private insurance and other payer spending for all medical conditions increased by 25 percent. Out-of-pocket spending for cardiovascular diseases, cancer, and diabetes decreased by 29 percent for 2009 through 2018, while out-of-pocket spending for all medical conditions increased by 14 percent over this period. The factors contributing to the trends were outside of our scope.

**Data table of Figure 1. Health Care Spending for Cardiovascular Diseases, Cancer, and Diabetes by Payer, 2018**

	Payer	Superscript	Amount (in Billions of Dollars)	Percent of each Disease Category Total, by Payer	Payer Category
Cardiovascular disease, diabetes, cancer	Medicare		156.0	41	Government : 54%
	Medicaid	a	35.4	9	
	Other federal payers	b	16.4	4	
	Private insurance and other payers	c	149.9	39	Private party portion of spending : 46%
	Out-of-pocket	d	26.0	7	

Source: GAO analysis of Agency for Healthcare Research and Quality (AHRQ) data. | GAO-21-593

Note: We analyzed 2018 spending for cardiovascular diseases, cancer, and diabetes using data summaries from the Medical Expenditure Panel Survey compiled by AHRQ. Spending information for 2009 through 2017 was inflated to 2018 dollars by AHRQ using the Gross Domestic Product price index.

<sup>a</sup>Medicaid includes spending by both federal and state governments.

<sup>b</sup>Other federal payers include Veterans Affairs, TRICARE, and other federal sources of health care coverage.

<sup>c</sup>Private insurance and other payers include private insurance and spending from state and local sources, workers' compensation, other private insurance, other public sources, and unspecified sources. Private insurance accounted for 92 percent (\$138.3 billion of the \$149.9 billion in health care spending by other payers for cardiovascular diseases, cancer, and diabetes).

<sup>d</sup>Out-of-pocket refers to spending by individuals and families, including cost sharing—both coinsurance and copays—paid by those with coverage through Medicare, Medicaid, other federal payers, and private insurance.

## Two Hundred Federal Diet-Related Efforts Aim to Reduce Americans' Risk of Chronic Health Conditions

Officials from the 21 federal agencies that we included in our review collectively identified 200 diet-related programs or activities (which we refer to as efforts) that they consider important for reducing Americans' risk of chronic health conditions.<sup>59</sup> The HHS National Institutes of Health leads the greatest number of efforts (49 efforts), followed by the USDA Food and Nutrition Service (21 efforts) and DOD (19 efforts). Two or more agencies co-lead 19 of the efforts. Table 3 shows the number of federal

<sup>59</sup>Some of the 200 efforts are led by departments, whereas others are led by components within departments. The 21 agencies include four departments and 17 components of five other departments.

diet-related efforts by lead agency and provides examples of these efforts (see app. I for a list of the 200 federal efforts).

**Table 3: Reported Federal Diet-Related Efforts by Lead Agency**

Lead agency (and department, if applicable)	Number of efforts	Example of efforts
National Institutes of Health (HHS) <sup>a</sup>	49	Diabetes Prevention Program Outcomes Study
Food and Nutrition Service (USDA)	21	Supplemental Nutrition Assistance Program
Department of Defense	19	Building Healthy Military Communities
Multiple agencies <sup>b</sup>	19	National Collaborative on Childhood Obesity Research
Centers for Disease Control and Prevention (HHS)	13	Community Preventive Services Task Force
Economic Research Service (USDA)	13	Research on Food Access
Agricultural Research Service (USDA)	9	Jean Mayer Human Nutrition Research Center on Aging at Tufts University
Food and Drug Administration (HHS)	7	Nutrition Facts Label
Office of the Assistant Secretary for Health (HHS)	6	Healthy People Nutrition and Weight Status Topic Area
Agency for Healthcare Research and Quality (HHS)	5	Counseling for Healthy Weight and Weight Gain During Pregnancy
Centers for Medicare and Medicaid Services (HHS)	5	National Coverage Determination for Intensive Behavioral Therapy for Obesity
Department of Veterans Affairs	5	Nutrition Screening, Education, Clinical Intervention, Counseling, and Medical Nutrition Therapy
National Institute of Food and Agriculture (USDA)	5	Gus Schumacher Nutrition Incentive Program
National Institute of Standards and Technology (Department of Commerce)	5	Measurements and Standards to Support Nutrition Labeling
Administration for Community Living (HHS)	4	Older Americans Act Nutrition Services Program
Department of Housing and Urban Development	4	Linking Health and Housing Data
Health Resources and Services Administration (HHS)	4	Maternal and Child Health Nutrition Training Program
Indian Health Service (HHS)	3	Special Diabetes Program for Indians
Environmental Protection Agency	2	Air & Energy, Research Area 3 Output 10 (2019–2022); Product Title: Dietary Impacts on Air Pollution Health Effects
U.S. Coast Guard (Department of Homeland Security)	1	Weight Management Program
National Park Service (Department of the Interior)	1	National Park Service Healthy Parks Healthy People
<b>Total</b>	<b>200</b>	

Source: GAO analysis of agency information. | GAO-21-593

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Notes: We included current or ongoing efforts related to diet and identified by agency officials as playing an important role in reducing Americans' risk of chronic health conditions. Federal efforts encompass a wide range of programs and activities. In some cases, agencies identified multiple programs or activities as a single effort—for example, multiple research studies on the same topic could be considered one effort. The examples of efforts are illustrative and intended to capture a range of programs and activities.

Some of these efforts are led by departments, whereas others are led by components within departments. Components within the Department of Health and Human Services (HHS) and U.S. Department of Agriculture (USDA) lead many of the efforts.

<sup>a</sup>According to National Institutes of Health officials, the agency funds about 5,000 projects focused on nutrition and diet-related health conditions; however, for the purposes of this report, GAO did not include individual studies within larger research efforts.

<sup>b</sup>One of the efforts led by multiple agencies is co-led by the Agricultural Marketing Service (USDA), which is not listed as a lead agency on the table.

Federal efforts encompass a wide range of programs and activities, which we grouped into four categories: (1) research, (2) education and clinical services, (3) food assistance and access, and (4) regulatory action. The research category and the education and clinical services category include the largest number of efforts, at 119 and 72, respectively. Figure 2 describes the activities in each category and provides the total number of federal diet-related efforts per category.

**Figure 2. Categories of Reported Federal Diet-Related Efforts**

Category of efforts	Activities	Number of efforts
 <b>Research</b>	<ul style="list-style-type: none"> <li>• Collect and monitor data.</li> <li>• Fund, conduct, and review research studies.</li> <li>• Coordinate research by promoting interagency dialogue and sharing.</li> <li>• Advance and coordinate prevention research.</li> </ul>	119
 <b>Education and clinical services</b>	<ul style="list-style-type: none"> <li>• Inform or counsel patients or program beneficiaries.</li> <li>• Provide clinical services, such as medical nutrition therapy from a registered dietitian nutritionist, including nutrition diagnosis and counseling.</li> <li>• Use mass communication to inform the public.</li> <li>• Support and train individuals or organizations that provide education services.</li> </ul>	72
 <b>Food assistance and access</b>	<ul style="list-style-type: none"> <li>• Provide food or assistance in purchasing food to eligible beneficiaries experiencing food insecurity—times when households are unable to acquire adequate food because of insufficient money or other resources.</li> <li>• Help improve community access to healthy foods, such as through farmers markets, community gardens, and grocery stores.</li> </ul>	27
 <b>Regulatory action</b>	<ul style="list-style-type: none"> <li>• Produce legally binding requirements for food producers, manufacturers, retailers, and others, such as requiring establishments to include calorie information on menus.</li> <li>• Produce non-legally-binding recommendations and other information, such as guidance documents, for food producers, manufacturers, retailers, and others.</li> </ul>	6

Source: GAO analysis of agency information. | GAO-21-593

**Data table for Figure 2. Categories of Reported Federal Diet-Related Efforts**

Category of efforts	Activities	Number of efforts
Research	<ul style="list-style-type: none"> <li>• Collect and monitor data.</li> <li>• Fund, conduct, and review research studies.</li> <li>• Coordinate research by promoting interagency dialogue and sharing.</li> </ul>	119

Category of efforts	Activities	Number of efforts
	<ul style="list-style-type: none"> <li>• Advance and coordinate prevention research.</li> </ul>	
Education and clinical services	<ul style="list-style-type: none"> <li>• Inform or counsel patients or program beneficiaries.</li> <li>• Provide clinical services, such as medical nutrition therapy from a registered dietitian nutritionist, including nutrition diagnosis and counseling.</li> <li>• Use mass communication to inform the public.</li> <li>• Support and train individuals or organizations that provide education services.</li> <li>•</li> </ul>	72
Food assistance and access	<ul style="list-style-type: none"> <li>• Provide food or assistance in purchasing food to eligible beneficiaries experiencing food insecurity—times when households are unable to acquire adequate food because of insufficient money or other resources.</li> <li>• Help improve community access to healthy foods, such as through farmers markets, community gardens, and grocery stores.</li> </ul>	27
Regulatory Action	<ul style="list-style-type: none"> <li>• Produce legally binding requirements for food producers, manufacturers, retailers, and others, such as requiring establishments to include calorie information on menus.</li> <li>• Produce non-legally-binding recommendations and other information, such as guidance documents, for food producers, manufacturers, retailers, and others.</li> </ul>	6

Source: GAO analysis of agency information. | GAO-21-593

Note: Some efforts fell into multiple categories, so the sum of efforts in the figure exceeds the total number of diet-related efforts that GAO identified.

Examples of each type of effort are described below.

**Research.** USDA's Agricultural Research Service leads the Plant, Soil, and Nutrition Research Unit, an interdisciplinary laboratory focused on improving the security and nutritional quality of agricultural crops. Research areas include developing more secure plant species that can maintain productivity in nutrient-depleted soils, plant varieties with higher concentrations of critical mineral elements (e.g., iron, zinc) and health-promoting properties, and better genetic tools for use in crop improvement. For example, one research project aimed at promoting bean consumption is examining 200 different dry bean genotypes from around the world. Researchers will assess both their nutritional value and consumer acceptability in terms of cooking time and taste. Findings on the best-performing genotypes will then be available to farmers.

**Education and clinical services.** The Department of Veterans Affairs leads the MOVE! Weight Management Program for Veterans, which is a clinical intervention program designed to reduce obesity and risk of chronic obesity-associated conditions in veterans receiving care from the agency. MOVE! is an evidence-based comprehensive lifestyle intervention with behavioral and clinician support that equips veterans with the information, skills, and resources they need to achieve clinically meaningful weight loss (e.g., weight loss of 5 percent of initial body weight). MOVE! provides a comprehensive veteran workbook; a food and activity log; and a variety of other educational materials on nutrition, such as videos. The program also provides support to coordinators at VA medical facilities who deliver clinical MOVE! programming.

**Food assistance and access.** The USDA Food and Nutrition Service oversees the Supplemental Nutrition Assistance Program (SNAP), which provides nutrition benefits to low-income individuals and households. Through the program, qualifying households use an Electronic Benefits Transfer card, similar to a debit card, to purchase food at authorized retailers and farmers markets nationwide. To apply for SNAP, households provide information about their household finances and other circumstances. Eligible households are certified to receive benefits for a certain period—typically 3, 6, or 12 months—after which the household must be recertified to continue receiving benefits. SNAP is the largest federal nutrition assistance program; approximately 40 million people participated in the program in fiscal year 2020.

**Regulatory action.** The HHS Food and Drug Administration leads the development of regulations for the Menu Labeling effort.<sup>60</sup> These regulations require certain restaurants (e.g., chain restaurants with 20 or more locations) and similar retail food establishments (e.g., grocery stores serving prepared meals) to disclose calorie information on their menus and provide other nutrition information upon request. Restaurants must also include a statement on menus and menu boards to inform consumers that 2,000 calories per day is used for general nutrition advice, but calorie needs vary. The goal is to provide consumers with nutrition information in a clear and consistent manner to enable them to make informed and healthy dietary choices for themselves and their families when eating foods away from home. The Menu Labeling requirements also may encourage covered establishments to offer healthier alternatives, reformulate menu items, or offer smaller portions.

Many of the federal efforts target certain chronic conditions or specific populations. Our analysis shows that 65 percent of efforts (130 of 200) target one or more specific chronic conditions that are linked to diet. Specifically, 92 efforts address obesity, 77 address diabetes, 75 address cardiovascular diseases, and 37 address cancer.<sup>61</sup> An example of an effort addressing obesity is the DOD's Shipshape, which educates active duty service members on how to reduce their calorie intake. We also found that 64 percent of the efforts (128 of 200) focus on specific populations. Specifically, 44 efforts target children, teens, or young adults; 36 target low-income Americans; 26 target active-duty service members; 25 target elderly Americans; and other efforts cover a range of additional populations.<sup>62</sup> An example of an effort targeting children and women is the Pregnancy and Birth to 24 Months Project, co-led by HHS's Office of the Assistant Secretary for Health and USDA's Food and Nutrition Service. The project identifies topics of public health importance and conducts systematic reviews on diet and health for infants, toddlers, and women who are pregnant.<sup>63</sup>

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<sup>60</sup>*Food Labeling; Nutrition Labeling of Standard Menu Items in Restaurants and Similar Retail Food Establishments*, 79 Fed. Reg. 71,156 (Dec. 1, 2014).

<sup>61</sup>The sum of the efforts is greater than 200 because some efforts target multiple conditions.

<sup>62</sup>Federal diet-related efforts also target other demographic groups, such as Black Americans, people with disabilities, and veterans.

<sup>63</sup>The Pregnancy and Birth to 24 Months Project is part of a multi-phase initiative to examine gaps in scientific knowledge related to healthy diets and young children.

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## Agencies Have Taken Some Actions to Coordinate Diet-Related Efforts but Lack a Federal Strategy to Effectively Manage Fragmentation

Federal agencies have taken some actions to coordinate with each other on their diet-related efforts, but they have not effectively managed fragmentation of the efforts across the government, which could potentially lead to overlap and duplication of these efforts. Such fragmentation has impacted the agencies' ability to achieve outcomes and accountability, leverage resources, and sustain leadership. However, the agencies lack a federal strategy for directing their diet-related efforts. As discussed previously, coordinating efforts with mutually reinforcing or joint strategies can help manage fragmentation.

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### Agencies Have Taken Some Actions to Coordinate Diet-Related Efforts

Federal agencies have taken some actions to coordinate with each other on the 200 diet-related efforts we identified, which are fragmented across the 21 agencies.<sup>64</sup> For example:

**Healthy People.** The HHS Office of the Assistant Secretary for Health coordinates workgroups of federal experts from across the government to develop Healthy People, a set of national objectives for public health issued every 10 years.<sup>65</sup> The Nutrition and Weight Status Workgroup,

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<sup>64</sup>Appendix I indicates which efforts involve agencies from multiple departments. We have previously found that federal agencies have used collaborative mechanisms, such as interagency groups, to coordinate. These mechanisms can be used to address a range of purposes, including policy development; program implementation; oversight and monitoring; information sharing and communication; and building organizational capacity, such as staffing and training. See [GAO-12-1022](#).

<sup>65</sup>Healthy People does not identify which agencies are responsible for working toward achieving individual objectives. Officials from the Office of the Assistant Secretary for Health told us that HHS operating divisions and staff divisions assume leadership and responsibility for working toward the objectives.

comprising six of the 21 agencies in our review, has developed 17 objectives to meet by 2030. The objectives cover healthy food consumption and food security, among other topics.<sup>66</sup> Healthy People also addresses health disparities using a framework on five social determinants of health: economic stability, education access and quality, health care access and quality, neighborhood and built environment, and social and community context.

**Dietary Guidelines for Americans.** The USDA Food and Nutrition Service and the HHS Office of the Assistant Secretary for Health coordinate on the *Dietary Guidelines for Americans*, a document released every 5 years that summarizes scientific evidence and provides advice on healthy eating.<sup>67</sup> The Dietary Guidelines states that it is intended to form the basis of federal nutrition policy and programs.<sup>68</sup> For each edition, agency officials coordinate to select scientific experts for an external advisory committee to review the body of nutrition science to date. Officials then update the guidelines based on information in the committee's scientific report and input from other federal agencies and the public. The 2020-2025 edition was the first to include specific recommendations for all life stages, including infants and toddlers from birth to age 24 months and pregnant and lactating women.

**Interagency Committee on Human Nutrition Research.** Twelve of the 21 agencies in our review coordinate through the Interagency Committee on Human Nutrition Research, which aims to increase the overall effectiveness and productivity of federally supported or conducted human nutrition research. Officials from these agencies meet to discuss cross-cutting issues (such as the capacity of federal facilities to support nutrition research) and conduct joint projects in subcommittees. One of the subcommittees coordinates Dietary Reference Intake studies, which produce reference values on specific nutrient needs to reduce the risk of chronic health conditions. For example, the Dietary Reference Intakes for Sodium and Potassium recommend a maximum of 2,300 milligrams of

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<sup>66</sup>Other workgroups have also developed objectives related to diet, such as objectives on school meals and breastfeeding.

<sup>67</sup>According to officials from both agencies, many additional agencies provide valuable expertise and support throughout the development process.

<sup>68</sup>Not all federal diet-related efforts necessarily adhere to the Dietary Guidelines. For example, SNAP does not have nutrition requirements.

sodium per day for healthy adults.<sup>69</sup> Such recommendations support federal studies on broader dietary patterns and underpin the *Dietary Guidelines for Americans*. The committee's coordination on the Dietary Reference Intakes includes prioritizing nutrients for study; developing statements of work; and raising funds for contracting the National Academies of Sciences, Engineering, and Medicine to produce the studies.

**Diabetes Mellitus Interagency Coordinating Committee.** Eleven of the 21 agencies in our review coordinate through the Diabetes Mellitus Interagency Coordinating Committee, which aims to identify emerging issues and opportunities for federal diabetes-related activities, develop ways for agencies to leverage each other's expertise and resources, and ensure that activities are coordinated and not duplicative. Officials from these agencies engage in strategic planning for diabetes research, develop special programs, evaluate ongoing diabetes-related efforts, and meet to share information on specific topics. Recent meeting topics have covered COVID-19, equity approaches to addressing diabetes, and bone disorders associated with diabetes.

**Older Individuals Collaborative on Nutrition.** The Older Individuals Collaborative on Nutrition meets at least quarterly and includes over 30 federal nutritionists and other officials who work on programs that affect the nutritional health of older Americans, such as officials from the HHS Administration for Community Living and the HHS Centers for Medicare and Medicaid Services. Participants collaborate on projects and share respective agencies' activities—ranging from research to food and meal assistance to regulation.

**Next Generation Data Platform.** Two USDA agencies coordinate with each other and with the U.S. Census Bureau on the Next Generation Data Platform, which links state administrative data on USDA nutrition assistance programs to other data sets. USDA's Food and Nutrition Service and Economic Research Service work with the Census Bureau to acquire state-level administrative data for SNAP and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), and they link them to other data files through written agreements on interagency data sharing. The agencies then conduct joint research examining who participates in nutrition assistance programs, how

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<sup>69</sup>National Academies of Sciences, Engineering, and Medicine, *Dietary Reference Intakes for Sodium and Potassium* (Washington, D.C.: The National Academies Press, 2019).

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participation affects the lives of those individuals, and who does not participate and why.

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## Agencies Have Not Effectively Managed Fragmentation of Diet-Related Efforts

Despite federal agencies' actions to coordinate, they have not effectively managed fragmentation of diet-related efforts, which can potentially lead to overlap and duplication of these efforts. Such fragmentation has impacted the agencies' ability to achieve outcomes and accountability (such as building sufficient scientific evidence on specific dietary patterns and nutrient needs that could prevent diet-related chronic health conditions), designate resources to fund critical efforts, and sustain government-wide leadership over the long term.

### Achieving Outcomes and Accountability

Fragmentation has affected agencies' ability to achieve shared outcomes and accountability—that is, define desired outcomes and create a means to monitor, evaluate, and report on results, consistent with selected leading collaboration practices. For example:

**Outcomes.** Officials from three of the 16 agencies we interviewed mentioned federal efforts that work at cross-purposes or have conflicting outcomes. For example, officials from one agency said that HHS and USDA have not effectively aligned their missions in public health and agriculture. These officials said that USDA agricultural subsidies have created economic incentives for increased corn production. This has led to lower prices and increased consumption of corn syrup in Americans' diet.<sup>70</sup> However, HHS public health goals call for reduced consumption of sugars such as corn syrup. We have previously found that coordinating agencies may not have the same overall interests; in fact, they may have

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<sup>70</sup>We did not independently verify the prices and consumption of corn syrup. However, a 2016 study co-authored by CDC officials found that a higher consumption of calories from subsidized food commodities was associated with increased risk of obesity, dyslipidemia, and dysglycemia among U.S. adults. Dyslipidemia is an imbalance of lipids, such as cholesterol. Dysglycemia is an abnormal blood glucose level. The article called for better alignment of agricultural and nutritional policies. Siegel et al., "Association of Higher Consumption of Foods Derived from Subsidized Commodities with Adverse Cardiometabolic Risk among U.S. Adults," *JAMA Internal Medicine*, vol. 176, no. 8 (August 2016): pp. 1124-1132.

conflicting interests.<sup>71</sup> However, if agencies do not define outcomes based on what they share in common—in this case, the need to address diet-related chronic health conditions—they may be limited in their ability to achieve results.

**Accountability.** Agencies and experts have agreed that important gaps in scientific knowledge exist where research is sparse, such as on healthy diets for infants and young children.<sup>72</sup> For example, because of insufficient evidence, the 2020 Dietary Guidelines Advisory Committee was unable to draw conclusions about the relationship between several factors—dietary patterns during lactation, supplementation with omega-3 fatty acids, and consumption or avoidance of certain common food allergens—and child health and development.

In 2016, the Interagency Committee on Human Nutrition Research (including 12 agencies in our review) developed the National Nutrition Research Roadmap to identify gaps in nutrition research and encourage relevant federal agencies to (1) develop specific goals, objectives, strategies, and budget priorities based on the roadmap’s findings; and (2) identify their unique and collaborative roles, responsibilities, and required resources and time frames to accomplish those research goals.<sup>73</sup> Some agencies have responded to the roadmap. For example, the National Institutes of Health released a strategic plan for nutrition research.<sup>74</sup> However, officials from the Agricultural Research Service, which leads the committee with the National Institutes of Health, said the roadmap has not been used to the extent encouraged. Officials from another agency said that there are no accountability mechanisms or incentives to push

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<sup>71</sup>[GAO-12-1022](#).

<sup>72</sup>For examples of expert consensus reports, see Dietary Guidelines Advisory Committee, *Scientific Report of the 2020 Dietary Guidelines Advisory Committee*; and S. E. Fleischhacker et al., “Strengthening National Nutrition Research: Rationale and Options for a New Coordinated Federal Research Effort and Authority,” *American Journal of Clinical Nutrition*, vol. 112, no. 3 (September 2020): pp. 721-769.

<sup>73</sup>Interagency Committee on Human Nutrition Research, *National Nutrition Research Roadmap 2016–2021: Advancing Nutrition Research to Improve and Sustain Health* (Washington, D.C.: 2016).

<sup>74</sup>National Institutes of Health, *2020-2030 Strategic Plan for NIH Nutrition Research: A Report of the NIH Nutrition Research Task Force* (2020). The plan included specific goals, objectives, and strategies for the agency’s nutrition research—along with some discussion of priorities. An appendix listed several coordination mechanisms that were ongoing at the time of the plan’s issuance.

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individual agencies to do so. We have previously found that coordinating agencies can benefit from a means to track and monitor progress.<sup>75</sup>

### Designating Resources

Some agencies have been unable to designate resources to fund certain critical efforts that are fragmented across the government. For example, the 12 agencies in our review that participate in the Interagency Committee on Human Nutrition Research have not been able to identify sufficient shared resources to update Dietary Reference Intakes in a timely manner or to publish new reports on nutrients that have never been reviewed.<sup>76</sup> As previously discussed, the Dietary Reference Intakes identify specific nutrient needs, and they underpin the *Dietary Guidelines for Americans*, which forms the basis of federal nutrition policy and programs. Yet most Dietary Reference Intakes are outdated, according to October 2019 meeting minutes from the Interagency Committee on Human Nutrition Research and other documents we reviewed. An agency official who leads the committee told us that officials must seek resources from agencies participating in the committee on an ad hoc basis each year because the committee itself does not have any specific budget appropriations for the Dietary Reference Intakes or its other work. We have previously found that coordinating agencies need to identify and leverage sufficient funding for their work, though in some instances, specific congressional authority may be necessary in order to provide for interagency funding.<sup>77</sup>

### Defining and Sustaining Leadership

The 21 agencies in our review have not defined and sustained government-wide leadership over the long term, which has led to further challenges with fragmentation. There is leadership in place for individual diet-related efforts (for example, the *Dietary Guidelines for Americans*), as discussed previously. However, there is no government-wide entity with the responsibility and accountability for working across agency boundaries. In particular, as of April 2021, the Executive Office of the

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<sup>75</sup>[GAO-12-1022](#).

<sup>76</sup>In April 2021, officials from the HHS Office of the Assistant Secretary for Health told us that they were working on a joint funding agreement with USDA for fiscal year 2021 to update Dietary Reference Intakes. They said USDA had already identified \$1 million per year in funding going forward.

<sup>77</sup>[GAO-12-1022](#).

President was not leading or involved in any diet-related efforts, according to staff from the Office of Management and Budget and the White House Office of Science and Technology Policy. In interviews, officials from seven of 16 agencies mentioned leadership challenges as obstacles to coordination or mentioned the need for effective leadership. These challenges included ones related to designating leadership, sustaining leadership, and ensuring leaders are committed and have sufficient expertise. For example, officials from one agency stated that no federal entity had been designated to lead federal efforts working toward achieving Healthy People objectives on reducing the proportion of adults and children with obesity.<sup>78</sup> They said that addressing the U.S. obesity crisis would take an endorsement at the highest levels of government, such as through a national campaign.

We have previously reported that designated leadership with necessary authority is beneficial because it centralizes accountability and can speed decision-making.<sup>79</sup> The influence of leadership on federal activities can be strengthened by a direct relationship with the President, Congress, and other high-level officials. However, lack of continuity of leadership is a frequent challenge to coordination, particularly when administrations change.

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## Agencies Lack a Federal Strategy to Effectively Manage Fragmentation

Coordinating efforts with mutually reinforcing or joint strategies can help manage fragmentation, but agencies lack a federal strategy that could direct the numerous diet-related efforts across the federal government.<sup>80</sup> Specifically, a strategy could help the agencies achieve outcomes and accountability, designate resources, and define and sustain leadership. When asked whether the federal government had a strategy for directing

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<sup>78</sup>As mentioned previously, Healthy People does not identify specific agencies responsible for working toward achieving objectives.

<sup>79</sup>[GAO-12-1022](#).

<sup>80</sup>A federal strategy is a type of interagency coordination mechanism—typically, a document or initiative—that provides a broad framework for addressing issues that cut across federal agencies. Unlike a national strategy, it does not necessarily include other levels of government and sectors.

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diet-related efforts, officials from the 16 agencies we interviewed either said there is not a strategy or were not able to identify one.<sup>81</sup>

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<sup>81</sup>In some cases, these officials identified efforts that do not represent comprehensive strategies, such as the *Dietary Guidelines for Americans* (a set of nutrition guidelines) or the Interagency Committee on Human Nutrition Research (an interagency group that primarily covers nutrition research). Officials from the remaining five of 21 agencies were not able to meet with us due to COVID-19, declined to meet or answer questions, or did not respond to our requests for information.

A  
Diet Opportunities Exist for a New  
Federal Strategy on Diet and

Prior National Strategy on  
Was Not Sustained

Prior Health to 2017, federal agencies did have a national strategy for addressing diet-related chronic health conditions and other public health issues, but it was not sustained. The Patient Protection and Affordable Care Act of 2010 required the President to establish a new National Prevention, Health Promotion and Public Health Council to develop a national strategy for public health.<sup>82</sup>

The resulting 2011 National Prevention Strategy identified healthy eating as one of seven priorities for improving Americans' health (see sidebar).<sup>83</sup> The strategy set key indicators to measure in 2021, including specific targets to reduce the proportion of adults and children who have obesity, reduce the average daily sodium consumption in the population, and increase the proportion of infants who are breastfed exclusively through 6 months.

According to agency documents, the 2011 strategy helped federal agencies to coordinate in new ways—for example, on healthy food guidelines for federal worksites; housing and health data linkages; and mass communication on the MyPlate icon, which reminds people to fill half of their plates with fruits and vegetables.

Despite these benefits, officials responsible for the strategy said that the subsequent administration did not implement the strategy or report on progress toward meeting 2021 targets because it was not a policy priority for the former Executive Office of the President.

According to leading collaboration practices we have previously identified, to achieve a common outcome, coordinating agencies can establish mutually reinforcing or joint strategies, such as federal strategies.<sup>84</sup> Federal strategies to coordinate programs that address cross-cutting issues of broad national need—such as addressing the risk to Americans from diet-related chronic health conditions—can help manage fragmented

**National Prevention Strategy: America's Plan for Better Health and Wellness**

In 2011, the National Prevention, Health Promotion and Public Health Council—with the U.S. Surgeon General as its chair—published the National Prevention and Health Promotion Strategy. The council comprised heads of 17 federal departments, agencies, and offices.

The strategy covered seven priorities to prevent chronic disease and injury: tobacco-free living, preventing drug abuse and excessive alcohol use, healthy eating, active living, injury- and violence-free living, reproductive and sexual health, and mental and emotional well-being.

The healthy eating priority included five recommendations related to diet:

1. Increase access to healthy and affordable foods in communities.
2. Implement organizational and programmatic nutrition standards and policies.
3. Improve nutritional quality of the food supply.
4. Help people recognize and make healthy food and beverage choices.
5. Support policies and programs that promote breastfeeding.

To implement these recommendations, the strategy listed nine specific actions the federal government could take and a number of actions nonfederal stakeholders could take.

Sources: GAO and Department of Health and Human Services. | GAO-21-593

<sup>82</sup>Pub. L. No. 111-148, § 4001, 124 Stat. 119, 538 (2010).

<sup>83</sup>National Prevention Council, *National Prevention Strategy* (Washington, D.C.: U.S. Department of Health and Human Services, Office of the Surgeon General, June 16, 2011).

<sup>84</sup>[GAO-12-1022](#).

efforts.<sup>85</sup> In particular, we have found that federal strategies can help agencies address fragmentation to better achieve outcomes and accountability, designate resources, and sustain leadership.<sup>86</sup> Agency officials and nonfederal stakeholders we interviewed—who generally supported a new federal strategy—identified opportunities for a strategy to help in these areas.<sup>87</sup>

**Achieving outcomes and accountability.** Officials from five of the 16 agencies we interviewed mentioned that a federal strategy could help define outcomes based on common food system challenges, such as the insufficient quantity of nutritious food produced in the United States or imported for American consumption. Such challenges were detailed in a 2018 HHS report, which recommended increased alignment of federal efforts related to food, agriculture, and nutrition in order to ensure an adequate and healthy food supply.<sup>88</sup> The HHS report cited a 2015 study that identified significant historical gaps between the types of foods the Dietary Guidelines recommended and the availability of those foods in the United States.<sup>89</sup> In particular, the report noted one finding from the study that the availability of fruits and vegetables has been insufficient for all Americans to meet the relevant guidelines.

In addition, officials from two of the 16 agencies mentioned that a new strategy could help establish accountability mechanisms. For example, officials said that a strategy could include performance measures for diet-related outcomes related to the economy and military readiness, as well as a potential mandated program evaluation of the Dietary Guidelines for Americans.

**Designating resources.** A federal strategy could help agencies devote resources for research and other desired outcomes, such as addressing

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<sup>85</sup>[GAO-11-617T](#).

<sup>86</sup>[GAO-12-1022](#).

<sup>87</sup>Officials from six agencies supported a new strategy, and officials from one additional agency suggested multiple new strategies. Officials from the remaining nine agencies said they were not in a position to comment or deferred to the HHS Office of the Assistant Secretary for Health, which was one of the agencies supporting a strategy.

<sup>88</sup>P. Crawford et al., *The Role of Law and Policy*.

<sup>89</sup>P.E. Miller et al., “The United States Food Supply Is Not Consistent with Dietary Guidance: Evidence from an Evaluation Using the Healthy Eating Index-2010,” *Journal of the Academy of Nutrition and Dietetics*, vol. 115, no. 1 (January 2015): pp. 95-100.

health disparities across populations. For example, officials from seven of 16 agencies mentioned that a new strategy could focus on disparities in diet-related chronic health conditions, including disparities caused by socio-economic and regional factors.<sup>90</sup> Recent reports from nonfederal stakeholders have also outlined how increased coordination could improve nutrition assistance programs that serve people of low socio-economic status.<sup>91</sup> As we noted above, certain chronic health conditions disproportionately affect men, Black Americans, and people living in the southern United States, among other populations.

**Defining and sustaining leadership.** A federal strategy could help agencies define and sustain government-wide leadership over the long term. Recent consensus reports from nonfederal stakeholders and academic faculty have presented options for designated leadership and necessary authority in the context of a federal strategy.<sup>92</sup> Some options involve strengthening the authority of existing entities, such as HHS and USDA or the Interagency Committee on Human Nutrition Research. Others involve establishing new positions or federal entities, such as an Office of the National Director of Food and Nutrition, modeled after the Office of the Director of National Intelligence. According to a 2020 report published by the American Society for Nutrition, the office could coordinate and harmonize diet-related efforts across the federal government, with its director serving as the principal nutrition advisor to the White House, federal agencies, and Congress.<sup>93</sup> The office could also be mobilized to advise on urgent situations affecting diet and diet-related

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<sup>90</sup>Officials from the HHS Indian Health Service also stated that interventions to address chronic conditions should address diet along with other important population risk factors, such as poverty, structural racism, stress, and exposure to environmental toxins.

<sup>91</sup>See, for example, S.N. Bleich et al., *Strengthening the Public Health Impacts of SNAP: Key Opportunities for the Next Farm Bill* (Durham, NC: Robert Wood Johnson Foundation, Healthy Eating Research, July 2021); and Bipartisan Policy Center, *Leading with Nutrition: Leveraging Federal Programs for Better Health: Recommendations from the BPC SNAP Task Force* (Washington, D.C.: March 2018).

<sup>92</sup>Consensus reports provide joint findings and recommendations from a panel of experts. See, for example, The Rockefeller Foundation, *Open Letter to the Transition Team on the U.S. Food System* (Nov. 24, 2020), accessed May 26, 2021, <https://www.rockefellerfoundation.org/news/open-letter-to-the-transition-team-on-the-u-s-food-system/>; Fleischhacker et al., “Strengthening National Nutrition Research;” and J. Mande et al., *Report of the 50th Anniversary of the White House Conference on Food, Nutrition, and Health: Honoring the Past, Taking Actions for our Future* (Boston, MA: March 2020).

<sup>93</sup>Fleischhacker et al., “Strengthening National Nutrition Research.”

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chronic health conditions, such as the COVID-19 pandemic, which require immediate and ongoing leadership and coordination.

### Agency Officials Say They Lack Authority to Lead a Federal Strategy on Diet

Despite their support for a federal strategy to coordinate diet-related efforts, no agency officials we interviewed asserted that their agencies had the authority to lead a federal strategy that would have reasonable assurance of being sustained across administrations. Officials from six agencies said they would not have the authority, and officials from the remaining 10 agencies said they did not know or were not in a position to comment. Some officials stated that they would have the authority to lead a strategy for their agency alone but not for the entire federal government.

A federal strategy—with a designated federal entity that has commensurate authority (e.g., over budgets and resources) to lead its development and implementation—could help agencies with a role in diet to achieve outcomes and accountability, designate resources, and define and sustain leadership.<sup>94</sup> One aspect of accountability is assessing the effectiveness of diet-related efforts—including the 200 efforts we identified in this report—within a broader framework of government-wide outcomes and performance measures, such as the Healthy People objectives. In doing so, agencies may also identify potential gaps, overlap, or duplication among the efforts. Managing any problems identified could result in improved, cost-effective outcomes for reducing Americans' risk of diet-related chronic health conditions.

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## Conclusions

The toll of diet-related chronic health conditions in the United States is high and may worsen if current trends continue. In 2018, over half of deaths among adults were the result of conditions that, in some cases, could have been prevented with improved diet. And increases in adult obesity—including a 46 percent rise in severe obesity in approximately a decade—could be a bellwether for increases in other chronic health

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<sup>94</sup>We previously convened an expert panel on a national strategy for strengthening the federal food safety oversight system and addressing fragmentation. The panel identified key elements of strategies, which included authority and sources of funding for implementation. See GAO, *Food Safety: A National Strategy Is Needed to Address Fragmentation in Federal Oversight*, [GAO-17-74](#) (Washington, D.C.: Jan. 13, 2017).

conditions and resulting deaths. In addition, diet-related chronic health conditions are intertwined with other ongoing national challenges, such as the COVID-19 pandemic.

In the federal government, multiple agencies with varying missions and jurisdictions have carried out—and coordinated on—a large number of efforts to improve Americans’ diet. However, the actions that agencies have taken to date to coordinate these efforts have not fully managed fragmentation and the potential for overlap and duplication of efforts, impacting agencies’ ability to achieve outcomes, designate resources, and sustain leadership. The 2011 National Prevention Strategy aimed to do so, but its ties to the Executive Office of the President meant that it was not sustained across administrations. In the absence of this or any other strategy, federal officials are left without reasonable assurance that their extensive efforts are effective in reducing Americans’ risk of diet-related chronic health conditions.

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## Matter for Congressional Consideration

Congress should consider identifying and directing a federal entity to lead the development and implementation of a federal strategy to coordinate diet-related efforts that aim to reduce Americans’ risk of chronic health conditions. The strategy could incorporate elements from the 2011 National Prevention Strategy and should address outcomes and accountability, resources, and leadership. (Matter for Consideration 1)

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## Agency Comments

We provided a draft of this report to the 21 agencies with a role in diet, the White House Office of Science and Technology Policy, and the Office of Management and Budget for review and comment. The Department of Defense provided comments, reproduced in appendix II, in concurrence with our findings. The following agencies provided technical comments, which we incorporated as appropriate: U.S. Department of Agriculture, Department of Health and Human Services, Department of Veterans Affairs, and Office of Science and Technology Policy. The Office of Management and Budget did not provide comments, and the remaining agencies informed us that they had no comments.

As agreed with your offices, unless you publicly announce the contents of this report earlier, we plan no further distribution until 30 days from the

report date. At that time, we will send copies to the appropriate congressional committees, the heads of the 21 agencies with a role in diet, the Director of the White House Office of Science and Technology Policy, and the Director of the Office of Management and Budget. In addition, the report will be available at no charge on the GAO website at <https://www.gao.gov>.

If you or your staff have any questions about this report, please contact Steve D. Morris at (202) 512-3841 or [morriss@gao.gov](mailto:morriss@gao.gov), or Sharon M. Silas at (202) 512-7114 or [silass@gao.gov](mailto:silass@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix III.



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**Appendix I: List of Federal Diet-Related Efforts  
by Department and Agency**

# Appendix I: List of Federal Diet-Related Efforts by Department and Agency

<b>Federal effort</b>	<b>Lead component agency</b>	<b>Category of effort</b>	<b>Interdepartmental effort</b>
<b>Department of Agriculture</b>			
Agriculture and Food Research Initiative Competitive Grants Program, Foundational and Applied Science Program, Program Area: Diet, Nutrition, and the Prevention of Chronic Disease	National Institute of Food and Agriculture	Education and clinical services, research	The effort is not interdepartmental
Agriculture and Food Research Initiative Competitive Grants Program, Foundational and Applied Science Program, Program Area: Food and Human Health	National Institute of Food and Agriculture	Research	The effort is not interdepartmental
Arkansas Children's Nutrition Center	Agricultural Research Service	Research	The effort is not interdepartmental
Basic Daily Food Allowance	Economic Research Service	Research	Multiple departments participate in the effort, making it interdepartmental
Beltsville Human Nutrition Research Center	Agricultural Research Service	Research	Multiple departments participate in the effort, making it interdepartmental
Child and Adult Care Food Program	Food and Nutrition Service	Food assistance and access	The effort is not interdepartmental
Child Nutrition Research	Economic Research Service	Research	The effort is not interdepartmental
Children's Nutrition Research Center at Baylor University College of Medicine	Agricultural Research Service	Research	The effort is not interdepartmental
Commodity Supplemental Food Program	Food and Nutrition Service	Food assistance and access	The effort is not interdepartmental
Expanded Food and Nutrition Education	National Institute of Food and Agriculture	Education and clinical services	The effort is not interdepartmental
Farm to School	Food and Nutrition Service	Education and clinical services, food assistance and access	Multiple departments participate in the effort, making it interdepartmental
Food Assistance Data and Collaborative Research Program	Economic Research Service	Research	The effort is not interdepartmental

**Appendix I: List of Federal Diet-Related Efforts  
by Department and Agency**

<b>Federal effort</b>	<b>Lead component agency</b>	<b>Category of effort</b>	<b>Interdepartmental effort</b>
Food Distribution Program on Indian Reservations	Food and Nutrition Service	Education and clinical services, food assistance and access	The effort is not interdepartmental
Food Expenditure, Poverty, and Supplemental Nutrition Assistance Program (SNAP) Participation of U.S. Veterans	Economic Research Service	Research	Multiple departments participate in the effort, making it interdepartmental
Fresh Fruit and Vegetable Program	Food and Nutrition Service	Food assistance and access	Multiple departments participate in the effort, making it interdepartmental
Grand Forks Human Nutrition Research Center	Agricultural Research Service	Research	The effort is not interdepartmental
Gus Schumacher Nutrition Incentive Program	National Institute of Food and Agriculture	Food assistance and access	Multiple departments participate in the effort, making it interdepartmental
Healthy Eating Index	Food and Nutrition Service	Research	Multiple departments participate in the effort, making it interdepartmental
Human Nutrition National Program	Agricultural Research Service	Research	Multiple departments participate in the effort, making it interdepartmental
Jean Mayer Human Nutrition Research Center on Aging at Tufts University	Agricultural Research Service	Research	The effort is not interdepartmental
MyPlate	Food and Nutrition Service	Education and clinical services	Multiple departments participate in the effort, making it interdepartmental
National Food and Nutrient Analysis Program	Agricultural Research Service	Research	Multiple departments participate in the effort, making it interdepartmental
National School Lunch Program	Food and Nutrition Service	Food assistance and access	Multiple departments participate in the effort, making it interdepartmental
Next Generation Data Platform	Economic Research Service	Research	Multiple departments participate in the effort, making it interdepartmental

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<b>Federal effort</b>	<b>Lead component agency</b>	<b>Category of effort</b>	<b>Interdepartmental effort</b>
Nutrition Communicators Network	Food and Nutrition Service	Education and clinical services	Multiple departments participate in the effort, making it interdepartmental
Nutrition Evidence Systematic Review	Food and Nutrition Service	Research	Multiple departments participate in the effort, making it interdepartmental
Plant, Soil and Nutrition Research Unit	Agricultural Research Service	Research	The effort is not interdepartmental
Produce Prescription Program	National Institute of Food and Agriculture	Education and clinical services, Food assistance and access	The effort is not interdepartmental
Research on Consumer Information and Labeling	Economic Research Service	Research	Multiple departments participate in the effort, making it interdepartmental
Research on Diet Quality and Nutrition	Economic Research Service	Research	Multiple departments participate in the effort, making it interdepartmental
Research on Food Access	Economic Research Service	Research	The effort is not interdepartmental
Research on Food Consumption and Demand	Economic Research Service	Research	The effort is not interdepartmental
Research on Food Security in the U.S.	Economic Research Service	Research	The effort is not interdepartmental
Research on Obesity	Economic Research Service	Research	Multiple departments participate in the effort, making it interdepartmental
Research on Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)	Economic Research Service	Research	The effort is not interdepartmental
Research on SNAP	Economic Research Service	Research	The effort is not interdepartmental
School Breakfast Program	Food and Nutrition Service	Food assistance and access	Multiple departments participate in the effort, making it interdepartmental
SNAP Nutrition Education and Obesity Prevention Grant Program	Food and Nutrition Service	Education and clinical services, food assistance and access	Multiple departments participate in the effort, making it interdepartmental

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<b>Federal effort</b>	<b>Lead component agency</b>	<b>Category of effort</b>	<b>Interdepartmental effort</b>
Special Milk Program	Food and Nutrition Service	Food assistance and access	Multiple departments participate in the effort, making it interdepartmental
WIC	Food and Nutrition Service	Food assistance and access	Multiple departments participate in the effort, making it interdepartmental
Summer Food Service Program	Food and Nutrition Service	Food assistance and access	The effort is not interdepartmental
SNAP	Food and Nutrition Service	Food assistance and access	The effort is not interdepartmental
Team Nutrition	Food and Nutrition Service	Food assistance and access	Multiple departments participate in the effort, making it interdepartmental
The Emergency Food Assistance Program	Food and Nutrition Service	Food assistance and access	The effort is not interdepartmental
Western Human Nutrition Research Center at the University of California at Davis	Agricultural Research Service	Research	The effort is not interdepartmental
WIC Breastfeeding Promotion	Food and Nutrition Service	Education and clinical services	Multiple departments participate in the effort, making it interdepartmental
WIC Farmers' Market Nutrition Program	Food and Nutrition Service	Food assistance and access	The effort is not interdepartmental
WIC Nutrition Education	Food and Nutrition Service	Education and clinical services	Multiple departments participate in the effort, making it interdepartmental
<b>Department of Commerce</b>			
Development of Serum-Based Standard Reference Materials to Assess Nutritional Status	National Institute of Standards and Technology	Research	Multiple departments participate in the effort, making it interdepartmental
Health Assessment Measurements Quality Assurance Program	National Institute of Standards and Technology	Research	Multiple departments participate in the effort, making it interdepartmental
Food Protein Allergen Program	National Institute of Standards and Technology	Research	Multiple departments participate in the effort, making it interdepartmental

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<b>Federal effort</b>	<b>Lead component agency</b>	<b>Category of effort</b>	<b>Interdepartmental effort</b>
Measurements and Standards for Botanical Dietary Supplements	National Institute of Standards and Technology	Research	Multiple departments participate in the effort, making it interdepartmental
Measurements and Standards to Support Nutrition Labeling	National Institute of Standards and Technology	Research	Multiple departments participate in the effort, making it interdepartmental
<b>Department of Defense</b>			
21st Century Sailor	N/A	Education and clinical services	The effort is not interdepartmental
Army Wellness Center	N/A	Education and clinical services	The effort is not interdepartmental
Better Body, Better Life	N/A	Education and clinical services	The effort is not interdepartmental
Building Healthy Military Communities	N/A	Education and clinical services	Multiple departments participate in the effort, making it interdepartmental
Changing Course	N/A	Education and clinical services	Multiple departments participate in the effort, making it interdepartmental
Commander, Navy Installations Command's Morale, Welfare and Recreation Fitness	N/A	Education and clinical services	The effort is not interdepartmental
Congressionally Directed Medical Research Programs Peer Reviewed Medical Research Program	N/A	Research	The effort is not interdepartmental
Diabetes Self-Management Education and Support	N/A	Education and clinical services	The effort is not interdepartmental
Fit for Performance	N/A	Education and clinical services	The effort is not interdepartmental
Go-for-Green Program	N/A	Education and clinical services	The effort is not interdepartmental
Group Lifestyle Balance	N/A	Education and clinical services	Multiple departments participate in the effort, making it interdepartmental
Human Performance Resources by Consortium for Health and Military Performance	N/A	Education and clinical services	Multiple departments participate in the effort, making it interdepartmental
Military Nutrition Environment Tool	N/A	Research	The effort is not interdepartmental

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<b>Federal effort</b>	<b>Lead component agency</b>	<b>Category of effort</b>	<b>Interdepartmental effort</b>
Military Nutrition Research Program	N/A	Research	Multiple departments participate in the effort, making it interdepartmental
Military OneSource	N/A	Education and clinical services	The effort is not interdepartmental
Operation Supplement Safety	N/A	Education and clinical services	Multiple departments participate in the effort, making it interdepartmental
Performance Triad	N/A	Education and clinical services	The effort is not interdepartmental
Project Health, Readiness Optimization	N/A	Education and clinical services	The effort is not interdepartmental
Shipshape	N/A	Education and clinical services	The effort is not interdepartmental
<b>Department of Health and Human Services</b>			
Agency for Healthcare Research and Quality and Health Resources and Services Administration Collaboration on Hypertension	Agency for Healthcare Research and Quality, Health Resources and Services Administration	Education and clinical services	The effort is not interdepartmental
Alliance of Randomized Trials of Medicine Versus Metabolic Surgery in Type 2 Diabetes	National Institutes of Health	Research	The effort is not interdepartmental
Alpha-Tocopherol, Beta-Carotene Cancer Prevention Study	National Institutes of Health	Research	The effort is not interdepartmental
Atherosclerosis Risk in Communities	National Institutes of Health	Research	The effort is not interdepartmental
Behavioral Counseling Interventions on Healthful Diet and Physical Activity for Cardiovascular Disease Prevention in Adults Without Known Cardio-Vascular Risk Factors	Agency for Healthcare Research and Quality	Research	Multiple departments participate in the effort, making it interdepartmental
Behavioral Counseling Interventions on Healthful Diet and Physical Activity to Prevent Cardiovascular Disease in Adults With Cardio-Vascular Risk Factors	Agency for Healthcare Research and Quality	Research	Multiple departments participate in the effort, making it interdepartmental
Cardiovascular Health Study	National Institutes of Health	Research	The effort is not interdepartmental
Childhood Obesity Research Demonstration Projects	Centers for Disease Control and Prevention	Education and clinical services, research	Multiple departments participate in the effort, making it interdepartmental
Chronic Disease Self-Management Education Programs	Administration for Community Living	Education and clinical services	The effort is not interdepartmental
Chronic Kidney Diseases in Children Study	National Institutes of Health	Research	The effort is not interdepartmental

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<b>Federal effort</b>	<b>Lead component agency</b>	<b>Category of effort</b>	<b>Interdepartmental effort</b>
Chronic Renal Insufficiency Cohort Study	National Institutes of Health	Research	The effort is not interdepartmental
Community Preventive Services Task Force	Centers for Disease Control and Prevention	Research	Multiple departments participate in the effort, making it interdepartmental
Consumer Education	Food and Drug Administration	Education and clinical services	Multiple departments participate in the effort, making it interdepartmental
Core Set of Adult Health Care Quality Measures for Medicaid and Children's Health Insurance Program	Centers for Medicare and Medicaid Services	Research	The effort is not interdepartmental
Core Set of Children's Health Care Quality Measures for Medicaid and Children's Health Insurance Program	Centers for Medicare and Medicaid Services	Research	The effort is not interdepartmental
Coronary Artery Risk Development in Young Adults	National Institutes of Health	Research	The effort is not interdepartmental
Counseling for Healthy Weight and Weight Gain During Pregnancy	Agency for Healthcare Research and Quality	Research	Multiple departments participate in the effort, making it interdepartmental
Diabetes Mellitus Interagency Coordinating Committee	National Institutes of Health	Education and clinical services, research	Multiple departments participate in the effort, making it interdepartmental
Diabetes Prevention Program Outcomes Study	National Institutes of Health	Research	The effort is not interdepartmental
Dietary Reference Intakes and Chronic Disease Endpoints Workshop	National Institutes of Health	Research	Multiple departments participate in the effort, making it interdepartmental
Environmental Influences on Child Health Outcomes Program	National Institutes of Health	Research	The effort is not interdepartmental
Federal Working Group on Dietary Supplements	National Institutes of Health	Research	Multiple departments participate in the effort, making it interdepartmental
Food Package Claims	Food and Drug Administration	Regulatory action	Multiple departments participate in the effort, making it interdepartmental
Framingham Heart Study	National Institutes of Health	Research	The effort is not interdepartmental
Guiding Principles for Developing Dietary Reference Intakes Based on Chronic Disease	National Institutes of Health	Research	Multiple departments participate in the effort, making it interdepartmental

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<b>Federal effort</b>	<b>Lead component agency</b>	<b>Category of effort</b>	<b>Interdepartmental effort</b>
Health Center Program Diabetes Quality Improvement Initiative	Health Resources and Services Administration	Research	The effort is not interdepartmental
Healthy People Nutrition and Weight Status Topic Area	Office of the Assistant Secretary for Health	Research	Multiple departments participate in the effort, making it interdepartmental
Healthy Schools	Centers for Disease Control and Prevention	Education and clinical services, research	Multiple departments participate in the effort, making it interdepartmental
High Obesity Program	Centers for Disease Control and Prevention	Education and clinical services, food assistance and access	Multiple departments participate in the effort, making it interdepartmental
Hispanics Community Health Study/Study of Latinos	National Institutes of Health	Research	The effort is not interdepartmental
Improving Patient Care	Indian Health Service	Education and clinical services	The effort is not interdepartmental
Indian Health Service Diabetes Care and Outcomes Audit	Indian Health Service	Research	The effort is not interdepartmental
Infant Feeding Practices Study	Centers for Disease Control and Prevention	Research	Multiple departments participate in the effort, making it interdepartmental
Innovations in Nutrition Programs and Services	Administration for Community Living	Education and clinical services, research	The effort is not interdepartmental
Intervention Nurses Start Infants Growing on Healthy Trajectories Clinical Trial	National Institutes of Health	Research	Multiple departments participate in the effort, making it interdepartmental
Jackson Heart Study	National Institutes of Health	Research	The effort is not interdepartmental
Look AHEAD (Action for Health in Diabetes) Study	National Institutes of Health	Research	The effort is not interdepartmental
Maternal and Child Health Nutrition Training Program	Health Resources and Services Administration	Education and clinical services	The effort is not interdepartmental
Meat Intake Study	National Institutes of Health	Research	The effort is not interdepartmental
Medicaid Coverage of Chronic Diseases	Centers for Medicare and Medicaid Services	Education and clinical services	The effort is not interdepartmental
Menu Labeling	Food and Drug Administration	Regulatory action	The effort is not interdepartmental
Metabolic Epidemiology Branch	National Institutes of Health	Research	The effort is not interdepartmental

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<b>Federal effort</b>	<b>Lead component agency</b>	<b>Category of effort</b>	<b>Interdepartmental effort</b>
Million Hearts	Centers for Disease Control and Prevention, Centers for Medicare and Medicaid Services, Health Resources and Services Administration	Education and clinical services, research	The effort is not interdepartmental
Mind Your Risks® Public Health Campaign	National Institutes of Health	Education and clinical services	The effort is not interdepartmental
Multi-Ethnic Cohort Study	National Institutes of Health	Research	The effort is not interdepartmental
Multi-Ethnic Studies of Atherosclerosis	National Institutes of Health	Research	The effort is not interdepartmental
National Clinical Care Commission	Office of the Assistant Secretary for Health	Education and clinical services	Multiple departments participate in the effort, making it interdepartmental
National Coverage Determination for Intensive Behavioral Therapy for Cardiovascular Disease	Centers for Medicare and Medicaid Services	Education and clinical services	The effort is not interdepartmental
National Coverage Determination for Intensive Behavioral Therapy for Obesity	Centers for Medicare and Medicaid Services	Education and clinical services	The effort is not interdepartmental
National Diabetes Prevention Program	Centers for Disease Control and Prevention	Education and clinical services	The effort is not interdepartmental
National Health and Nutrition Examination	Centers for Disease Control and Prevention	Research	Multiple departments participate in the effort, making it interdepartmental
National Health Interview Survey	Centers for Disease Control and Prevention	Research	Multiple departments participate in the effort, making it interdepartmental
National Institute on Aging Healthy Eating Website	National Institutes of Health	Education and clinical services	The effort is not interdepartmental
National Institutes of Health Common Fund Study The effort is not interdepartmental Metabolomics	National Institutes of Health	Research	The effort is not interdepartmental
National Institutes of Health Office of Nutrition Research	National Institutes of Health	Research	The effort is not interdepartmental
National Institutes of Health-AARP Diet and Health Study	National Institutes of Health	Research	The effort is not interdepartmental
National Institutes of Health-Food and Drug Administration Joint Leadership Council	National Institutes of Health	Research	The effort is not interdepartmental
Nonalcoholic Steatohepatitis Clinical Research Network	National Institutes of Health	Research	The effort is not interdepartmental
Northern Manhattan Study	National Institutes of Health	Research	The effort is not interdepartmental
Nurses Health Study	National Institutes of Health	Research	The effort is not interdepartmental

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<b>Federal effort</b>	<b>Lead component agency</b>	<b>Category of effort</b>	<b>Interdepartmental effort</b>
Nutrition and Supportive Services to American Indians, Alaskan Natives, and Native Hawaiians	Administration for Community Living	Education and clinical services, food assistance and access	The effort is not interdepartmental
Nutrition Facts Label	Food and Drug Administration	Regulatory action	The effort is not interdepartmental
Nutrition Innovation Strategy	Food and Drug Administration	Education and clinical services, regulatory action	The effort is not interdepartmental
Nutrition Intervention Trials in Linxian, China	National Institutes of Health	Research	The effort is not interdepartmental
Nutrition Obesity Research Centers	National Institutes of Health	Research	The effort is not interdepartmental
Nutrition Research Coordinating Committee	National Institutes of Health	Research	Multiple departments participate in the effort, making it interdepartmental
Nutrition Research Task Force and Strategic Plan for National Institutes of Health Nutrition Research	National Institutes of Health	Research	Multiple departments participate in the effort, making it interdepartmental
Nutritional Science Research Group	National Institutes of Health	Research	Multiple departments participate in the effort, making it interdepartmental
Obesity Research Task Force and Strategic Plan for National Institutes of Health Obesity Research	National Institutes of Health	Research	The effort is not interdepartmental
Office on Women's Health Healthy Eating	Office of the Assistant Secretary for Health	Education and clinical services	Multiple departments participate in the effort, making it interdepartmental
Older Americans Act Nutrition Services Program	Administration for Community Living	Education and clinical services, food assistance and access	The effort is not interdepartmental
Older Individuals Collaborative on Nutrition	Office of the Assistant Secretary for Health	Education and clinical services, food assistance and access, research	Multiple departments participate in the effort, making it interdepartmental
Online National Institute of Diabetes and Digestive and Kidney Diseases Health Information for Weight Management, Diet, and Nutrition	National Institutes of Health	Education and clinical services	The effort is not interdepartmental
Partially Hydrogenated Oils	Food and Drug Administration	Regulatory action	The effort is not interdepartmental

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<b>Federal effort</b>	<b>Lead component agency</b>	<b>Category of effort</b>	<b>Interdepartmental effort</b>
Pathways to Prevention Workshops	National Institutes of Health	Research	Multiple departments participate in the effort, making it interdepartmental
Physiology of the Weight-Reduced State Clinical Trial Consortium and Data Coordinating Center	National Institutes of Health	Research	The effort is not interdepartmental
Pooling Project of Prospective Studies of Diet and Cancer	National Institutes of Health	Research	The effort is not interdepartmental
Prevention Research Coordination Committee	National Institutes of Health	Research	The effort is not interdepartmental
Quality Improvement Awards	Health Resources and Services Administration	Education and clinical services	The effort is not interdepartmental
Racial and Ethnic Approaches to Community Health Program	Centers for Disease Control and Prevention	Education and clinical services, food assistance and access	The effort is not interdepartmental
Reasons for Geographic and Racial Differences in Stroke Study	National Institutes of Health	Research	The effort is not interdepartmental
Request for Information on Improved Understanding of Risk and Mechanisms for Developing Obesity in Infants and Young Children	National Institutes of Health	Research	The effort is not interdepartmental
Screening for Abnormal Blood Glucose and Type 2 Diabetes Mellitus	Agency for Healthcare Research and Quality	Research	Multiple departments participate in the effort, making it interdepartmental
Screening for Gestational Diabetes Mellitus	Agency for Healthcare Research and Quality	Research	Multiple departments participate in the effort, making it interdepartmental
Sodium Reduction	Food and Drug Administration	Regulatory action	The effort is not interdepartmental
Sodium Reduction in Communities Program	Centers for Disease Control and Prevention	Food assistance and access	The effort is not interdepartmental
Special Diabetes Program for Indians	Indian Health Service	Education and clinical services	The effort is not interdepartmental
State Physical Activity and Nutrition Program	Centers for Disease Control and Prevention	Education and clinical services, food assistance and access	The effort is not interdepartmental
Strong Heart Study	National Institutes of Health	Research	The effort is not interdepartmental
Surveillance	Centers for Disease Control and Prevention	Research	The effort is not interdepartmental
Teen Longitudinal Assessment of Bariatric Surgery	National Institutes of Health	Research	The effort is not interdepartmental

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<b>Federal effort</b>	<b>Lead component agency</b>	<b>Category of effort</b>	<b>Interdepartmental effort</b>
The Environmental Determinants of Diabetes in the Young Study	National Institutes of Health	Research	The effort is not interdepartmental
The Surgeon General's Call to Action to Control Hypertension	Office of the Assistant Secretary for Health	Education and clinical services, research	The effort is not interdepartmental
Uniform Data System Report	Health Resources and Services Administration	Research	The effort is not interdepartmental
Vitamin D and Type 2 Diabetes Study	National Institutes of Health	Research	The effort is not interdepartmental
Well-Integrated Screening and Evaluation for Women Across the Nation	Centers for Disease Control and Prevention	Education and clinical services, food assistance and access	The effort is not interdepartmental
Women's Health Initiative	National Institutes of Health	Research	The effort is not interdepartmental
Youth Engagement in Sports: Collaboration to Improve Adolescent Physical Activity and Nutrition Initiative	Office of the Assistant Secretary for Health	Education and clinical services	The effort is not interdepartmental
<b>Department of Homeland Security</b>			
Weight Management Program	U.S. Coast Guard	Education and clinical services	Multiple departments participate in the effort, making it interdepartmental
<b>Department of Housing and Urban Development</b>			
Integrated Wellness in Supportive Housing Demonstration	N/A	Research	The effort is not interdepartmental
Linking Health and Housing Data	N/A	Research	Multiple departments participate in the effort, making it interdepartmental
Section 202 Supportive Housing for Elderly Households Program	N/A	Education and clinical services	The effort is not interdepartmental
Section 811 Supportive Housing for Persons with Disabilities Program	N/A	Education and clinical services	The effort is not interdepartmental
<b>Department of the Interior</b>			
National Park Service Healthy Parks Healthy People	National Park Service	Education and clinical services, food assistance and access	Multiple departments participate in the effort, making it interdepartmental
<b>Department of Veterans Affairs (VA)</b>			
Healthy Teaching Kitchen Program	N/A	Education and clinical services	The effort is not interdepartmental
MOVE! Weight Management Program for Veterans	N/A	Education and clinical services	The effort is not interdepartmental

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<b>Federal effort</b>	<b>Lead component agency</b>	<b>Category of effort</b>	<b>Interdepartmental effort</b>
Nutrition Research	N/A	Research	The effort is not interdepartmental
Nutrition Screening, Education, Clinical Intervention, Counseling, and Medical Nutrition Therapy	N/A	Education and clinical services	Multiple departments participate in the effort, making it interdepartmental
Telephone Lifestyle Coaching	N/A	Education and clinical services	The effort is not interdepartmental
<b>Environmental Protection Agency</b>			
Air & Energy, Research Area 3 Output 10 (2019 The effort is not interdepartmental 2022); Product Title: Dietary Impacts on Air Pollution Health Effects	N/A	Research	The effort is not interdepartmental
Air, Climate, and Energy, Research Topic PEP 2.2 (2016 The effort is not interdepartmental 2019); Task Title: Examining the Potential Benefit and/or Harm of Modifiable Factors and Identification of Intervention Strategies to Mitigate the Health Effects of Air Pollution	N/A	Research	The effort is not interdepartmental
<b>Multiple departments</b>			
Cardiovascular Disease Prevention Veterans Affairs Virtual Medical Center (DOD and VA)	N/A	Education and clinical services	Multiple departments participate in the effort, making it interdepartmental
Department of Defense Food and Nutrition Subcommittee (DOD and VA)	N/A	Education and clinical services	Multiple departments participate in the effort, making it interdepartmental
Diabetes Self-Management Training Veterans Affairs Virtual Medical Center (DOD and VA)	N/A	Education and clinical services	Multiple departments participate in the effort, making it interdepartmental
Dietary Guidance Review Committee (HHS and USDA)	Food and Nutrition Service, Office of the Assistant Secretary for Health	Education and clinical services	Multiple departments participate in the effort, making it interdepartmental
<i>Dietary Guidelines for Americans</i> (HHS and USDA)	Food and Nutrition Service, Office of the Assistant Secretary for Health	Education and clinical services, research	Multiple departments participate in the effort, making it interdepartmental
Dietary Reference Intake United States and Canada Federal Working Group (DOD, HHS, and USDA)	Agricultural Research Service, National Institutes of Health	Research	Multiple departments participate in the effort, making it interdepartmental
Dietary Reference Intakes Subcommittee of the Interagency Committee on Human Nutrition Research (DOD, HHS, and USDA)	Agricultural Research Service, National Institutes of Health	Research	Multiple departments participate in the effort, making it interdepartmental

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<b>Federal effort</b>	<b>Lead component agency</b>	<b>Category of effort</b>	<b>Interdepartmental effort</b>
Dual Purpose with Dual Benefit: Research in Biomedicine and Agriculture Using Agriculturally Important Domestic Animal Species (HHS and USDA)	National Institute of Food and Agriculture, National Institutes of Health	Research	Multiple departments participate in the effort, making it interdepartmental
Federal Data Consortium on Pregnancy and Birth to 24 Months (HHS and USDA)	Agricultural Research Service, Centers for Disease Control and Prevention, Food and Drug Administration, Food and Nutrition Service, National Institutes of Health, Office of the Assistant Secretary for Health	Research	Multiple departments participate in the effort, making it interdepartmental
Household Food Insecurity and U.S. Department of Housing and Urban Development Federal Housing Assistance (Department of Housing and Urban Development and USDA)	Economic Research Service	Research	Multiple departments participate in the effort, making it interdepartmental
Housing and Health Convening (Department of Housing and Urban Development and HHS)	Centers for Disease Control and Prevention, National Institutes of Health	Research	Multiple departments participate in the effort, making it interdepartmental
Human Milk Composition Initiative (HHS and USDA)	Agricultural Research Service, Food and Drug Administration, Office of the Assistant Secretary for Health	Research	Multiple departments participate in the effort, making it interdepartmental
Interagency Committee on Human Nutrition Research (HHS and USDA)	Agricultural Research Service, National Institutes of Health, Office of the Assistant Secretary for Health	Research	Multiple departments participate in the effort, making it interdepartmental
Local Foods, Local Places (Environmental Protection Agency and USDA)	Agricultural Marketing Service	Food assistance and access	Multiple departments participate in the effort, making it interdepartmental
National Collaborative on Childhood Obesity Research (HHS and USDA)	Centers for Disease Control and Prevention, National Institutes of Health	Research	Multiple departments participate in the effort, making it interdepartmental
Pregnancy and Birth to 24 Months Project (HHS and USDA)	Food and Nutrition Service, Office of the Assistant Secretary for Health	Research	Multiple departments participate in the effort, making it interdepartmental
Veterans Affairs/Department of Defense Clinical Practice Guideline Development and Updating (DOD and VA)	N/A	Education and clinical services, research	Multiple departments participate in the effort, making it interdepartmental

Legend: ✓ = Multiple departments participate in the effort, making it interdepartmental; – = The effort is not interdepartmental; N/A = The effort does not involve a component.

Source: GAO analysis of agency information. | GAO-21-593

Notes: We included current or ongoing efforts related to diet and identified by agency officials as playing an important role in reducing Americans' risk of chronic health conditions. Federal efforts

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**Appendix I: List of Federal Diet-Related Efforts  
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encompass a wide range of programs and activities. In some cases, agencies identified multiple programs or activities as a single effort—for example, multiple research studies on the same topic could be considered one effort. According to National Institutes of Health officials, the agency funds about 5,000 projects focused on nutrition and diet-related health conditions; however, for the purposes of this report, GAO did not include individual studies within larger research efforts.

Some of the efforts are led by departments, such as the Department of Defense (DOD), whereas others are led by components within departments, such as the U.S. Department of Agriculture (USDA) or Department of Health and Human Services (HHS).

## Appendix II: Comments from the Department of Defense



THE ASSISTANT SECRETARY OF DEFENSE

1200 DEFENSE PENTAGON  
WASHINGTON, DC 20301-1200

**HEALTH AFFAIRS**

Mr. Steve Morris  
Director, Natural Resources & Environment  
U.S. Government Accountability Office  
441 G Street, NW, Washington, DC 20548

Dear Mr. Morris:

The purpose of this letter is a response to the Government Accountability Office request for the Department of Defense review of draft report 21-593 Code 103570, "Federal Strategy Needed to Coordinate Diet-Related Efforts." The Office of the Assistant Secretary of Defense for Health Affairs concurs without comment.

My point of contact for this effort is Dr. Donald Shell. Dr. Shell may be reached at donald.shell4.civ@mail.mil or (703) 681-1705.

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Terry Adirim, M.D., M.P.H., M.B.A.  
Acting

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## Text of Appendix II: Comments from the Department of Defense

Mr. Steve Morris

Director, Natural Resources & Environment

U.S. Government Accountability Office 441 G Street, NW, Washington, DC 20548

Dear Mr. Morris:

The purpose of this letter is a response to the Government Accountability Office request for the Department of Defense review of draft report 21-593 Code 103570, "Federal Strategy Needed to Coordinate Diet-Related Efforts." The Office of the Assistant Secretary of Defense for Health Affairs concurs without comment.

My point of contact for this effort is Dr. Donald Shell. Dr. Shell may be reached at [donald.shell4.civ@mail.mil](mailto:donald.shell4.civ@mail.mil) or (703) 681-1705.

Terry Adirim, M.D., M.P.H., M.B.A. Acting

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## Appendix III: GAO Contacts and Staff Acknowledgements

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### GAO Contacts

Steve D. Morris, Director, Natural Resources and Environment (202) 512-3841 or [morriss@gao.gov](mailto:morriss@gao.gov)

Sharon M. Silas, Director, Health Care (202) 512-7114 or [silass@gao.gov](mailto:silass@gao.gov)

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### Staff Acknowledgments

In addition to the contacts named above, Anne K. Johnson and Tom Conahan (Assistant Directors), Pauline Adams, Alexander Cattran, William Crafton, Mary Denigan-Macauley, Michelle Duren, Anthony C. Fernandez, Ellen Fried, Kelsey L. Kennedy, Gail-Lynn Michel, and Gloria Ross made key contributions to this report.

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Nutrition Education: *USDA Actions Needed to Assess Effectiveness, Coordinate Programs, and Leverage Expertise*. [GAO-19-572](#). Washington, D.C.: July 25, 2019.

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